



iSR6200

Router Manager

User's Guide

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Added a screen shot and description of the new Rescan toolbar button.	"Toolbar" on page 2-7
Added description of the new menu items Add Host Entity Wizard , Host's LUN Presentation Wizard , and Host's LUN Unpresentation Wizard .	"Wizards Menu" on page 2-4
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<p>Added Windows 2012 as an OS type available for discovered Fibre Channel and iSCSI initiators.</p> <p>Updated the screen shot (Figure 3-27) of the FC Presented Target page.</p> <p>Added information for the new Host Entities node.</p> <p>Updated the screen shot (Figure 4-1) to reflect removal of the Automatic Report Upload button.</p> <p>Added information for the new Job ETC column.</p> <p>Added a description and screen shot (Figure 4-5) of the Data Migration Job details page.</p>	<p>Fibre Channel "Information" on page 3-37</p> <p>iSCSI "Information" on page 3-39</p> <p>"FC Presented Target" on page 3-45</p> <p>"Host Entities" on page 3-71</p> <p>"Data Migration Info" on page 4-2</p> <p>"Active Data Migration Jobs" on page 4-4</p> <p>"Data Migration Job Details" on page 4-6</p>
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Preface

This guide describes the QLogic® SANsurfer® Router Manager features used to configure and manage the QLogic iSR6200 intelligent Storage Router (iSR). For hardware installation, configuration, and diagnostic details, see the *iSR6200 QLogic intelligent Storage Router (iSR) Installation Guide*.

Intended Audience

This guide is for users who are responsible for installing, managing, and servicing the iSR6200 router and the SAN equipment to which it is attached.

What's in This Guide

This guide contains the information needed to monitor the iSR6200 router using SANsurfer Router Manager. This preface explains the typographic conventions used in this guide, lists related documents, and specifies the intended audience.

The remainder of the user's guide is organized into the following chapters and appendices:

- [Chapter 1 Getting Started](#) provides information to help you begin using SANsurfer Router Manager. It describes how to start and exit /SANsurfer Router Manager, connect to routers, use the help system, and set system security.
- [Chapter 2 Understanding the User Interface](#) illustrates and describes the components of the SANsurfer Router Manager's GUI, including the windows, panes, menus, toolbar buttons, and status icons.
- [Chapter 3 Viewing Router Information](#) describes the windows used to monitor and manage the iSR6200 router—including its blades, ports, and connected devices—by viewing and selecting components in the router tree.
- [Chapter 4 Viewing Service Information](#) describes the pages used to monitor and manage the licensed services—including data migration—by viewing and selecting components in the services tree.

- [Appendix A Simple Network Management Protocol](#) provides reference material for the simple network management protocol (SNMP) protocol, which you can use to manage the iSR6200 router using a third-party SNMP management application.
- [Appendix B Log Messages](#) provides reference material on messages logged to a file, which you can retrieve using the **View Log** feature. (For details, see “Using the Router Log” in the help system.)

Following the appendices are a glossary of terms used and an index to help you quickly find the information you need.

What's in the Help System

Supplementing this user's guide is the SANsurfer Router Manager help system, which provides procedural topics organized as follows:

- ***Managing the Router*** provides procedures that walk you through some common management tasks performed using SANsurfer Router Manager, including assigning chassis and symbolic names, setting broadcast options, working with virtual port groups (VPGs), saving and restoring blade configuration, and using the router log.
- ***Using the Wizards*** describes the wizard dialog boxes that walk you through various router configuration procedures.
- ***Data Migration Solution*** provides basic information about this licensed feature. For complete details, refer to the *Data Migration Solution for iSR6200 User's Guide* and *Data Migration Service for iSR6200 Planning Guide*.

Related Materials

- *iSR6200 Quick Start Guide*, part number IS0054504-00
- *QLogic 6200 Storage Router Rack Mounting Guide*, part number ISR653401-00
- *iSR6200 QLogic intelligent Storage Router (iSR) Installation Guide*, part number ISR651101-00
- *iSR6200 Command Line Interface (CLI) User's Guide*, part number ISR654601-00
- *Internet Protocol, Version 6 (IPv6) Specification*, RFC2460
- *Neighbor Discovery for IP Version 6 (IPv6)*, RFC2461
- *IPv6 Stateless Address Autoconfiguration*, RFC2462

- *Internet Control Message Protocol (ICMPv6) for the Internet Protocol Version 6 (IPv6) Specification*, RFC2463
- *Transmission of IPv6 Packets over Ethernet Networks*, RFC2464
- iSCSI draft standard deaft-ietf-ips-iSCSI-20
- Internet engineering task force (IETF): *iSCSI Requirements and Design Considerations*, *iSCSI Naming and Discovery*, *Internet Protocol Specification (IPv4)*, RFC793
- *Transmission Control Protocol (TCP) Specification*, RFC1122, *Requirements for Internet Hosts-Communication Layers*
- *TCP Extensions for High Performance*, RFC1323
- *TCP Congestion Control*, RFC2581
- ANSI SCSI: SCSI-3 Architecture Model (SAM), X3T10/994D/Rev 18, SCSI-3 Controller Command Set, X3T10/Project 1047D/Rev 6c. IEEE: 802.1Q *Virtual LAN (VLAN)*, 802.1p *Priority of Service*, 802.3x *Flow Control*, 802.3ad *Link Aggregation*
- *SCSI-3 Fibre Channel Protocol (SCSI-FCP)*, X3.269:1996
- *Fibre Channel Physical and Signaling Interface (FC-PH)*, X3.230:199
- *Fibre Channel 2nd Generation (FC-PH-2)*, X3.297:1997
- *Third Generation Fibre Channel Physical and Signaling Interface (FC-PH-3)*, X3.303:1998, *Fibre Channel-Arbitrated Loop (FC-AL-2)*, working draft, revision 6.4, August 28, 1998
- *Fibre Channel Fabric Loop Attachment Technical Report (FC-FLA)* NCITS/TR-20:1998, *Fibre Channel-Private Loop Direct Attach Technical Report (FC-PLDA)*
- *SCSI Fibre Channel Protocol-2 (FCP-2)* working draft, revision 3, October 1, 1999
- *ANSI Information Technology-SCSI 3 Architecture Model*, revision 18, November 27, 1995

For information about downloading documentation from the QLogic Web site, see ["Downloading Updates" on page xviii](#).

Documentation Conventions

This guide uses the following documentation conventions:

- **NOTE** provides additional information.
- **CAUTION** indicates the presence of a hazard that could cause damage to equipment or loss of data.
- Text in [blue](#) font indicates a hyperlink (jump) to a figure, table, or section in this guide, and links to Web sites are shown in [underlined blue](#). For example:
 - ❑ [Table 9-2](#) lists problems related to the user interface and remote agent.
 - ❑ See [“Installation Checklist” on page 3-6](#).
 - ❑ For more information, visit www.qlogic.com.
- Text in **bold** font indicates user interface elements such as a menu items, buttons, check boxes, or column headings. For example:
 - ❑ Click the **Start** button, point to **Programs**, point to **Accessories**, and then click **Command Prompt**.
 - ❑ Under **Notification Options**, select the **Warning Alarms** check box.
- Text in `Courier` font indicates a file name, directory path, or command line text. For example:
 - ❑ To return to the root directory from anywhere in the file structure:
Type `cd /root` and press ENTER.
 - ❑ Enter the following command: `sh ./install.bin`
- Key names and key strokes are indicated with UPPERCASE:
 - ❑ Press CTRL+P.
 - ❑ Press the UP ARROW key.
- Text in *italics* indicates terms, emphasis, variables, or document titles. For example:
 - ❑ For a complete list of license agreements, refer to the *QLogic Software End User License Agreement*.
 - ❑ What are *shortcut keys*?
 - ❑ To enter the date type *mm/dd/yyyy* (where *mm* is the month, *dd* is the day, and *yyyy* is the year).

- Section titles between quotation marks identify related sections within this guide or topics within the help system.
- Screen shots that depict only that portion of the interface currently under discussion are shown with jagged edges, as shown in [Figure i](#).

Information

General Information

Symbolic Name: HP HSV200-0

Product Vendor: HP

Product ID: HSV200

Product Revision:

Target Type: Source

Array Bandwidth: Max Available

User defined Bandwidth (MB/s):

Load Balancing: Enabled

Maximum Concurrent I/O: 128

Enable I/O Pacing: Disable

LUNInfo Display: LUN ID

Array License: Not Applied

Physical Target Ports

Port	WWPN	Port ID
1	50-00-1F-E1-50-06-9D-28	01-0A-00
2	50-00-1F-E1-50-06-9D-29	01-0B-00
3	50-00-1F-E1-50-06-9D-2C	01-00-00
4	50-00-1F-E1-50-06-9D-2D	01-01-00

Save

Figure i. Example: Jagged Edges Depict Partial Interface

License Agreements

Refer to the *QLogic Software End User License Agreement* for a complete listing of all license agreements affecting this product.

Technical Support

Customers should contact their authorized maintenance provider for technical support of their QLogic products. QLogic-direct customers may contact QLogic Technical Support; others will be redirected to their authorized maintenance provider. Visit the QLogic support Web site listed in [Contact Information](#) for the latest firmware and software updates.

For details about available service plans, or for information about renewing and extending your service, visit the Service Program Web page:

<http://www.qlogic.com/Support/Pages/ServicePrograms.aspx>

Downloading Updates

The QLogic Web site provides periodic updates to product firmware, software, and documentation.

To download firmware, software, and documentation:

1. Go to the QLogic Downloads and Documentation page:
<http://driverdownloads.qlogic.com>
2. Under **QLogic Products**, type the QLogic model name in the search box.
3. In the search results list, locate and select the firmware, software, or documentation for your product.
4. View the product details Web page to ensure that you have the correct firmware, software, or documentation. For additional information, click the **Read Me** and **Release Notes** icons under **Support Files**.
5. Click **Download Now**.
6. Save the file to your computer.
7. If you have downloaded firmware or software, follow the installation instructions in the *Readme* file.

Instead of typing a model name in the search box, you can perform a guided search as follows:

1. Click the product type tab: **Adapters**, **Switches**, **Routers**, or **ASICs**.
2. Click the corresponding button to search by model or operating system.
3. Click an item in each selection column to define the search, and then click **Go**.
4. Locate the firmware, software, or document you need, and then click the icon to download or open the item.

Training

QLogic Global Training maintains a Web site at www.qlogictraining.com offering online and instructor-led training for all QLogic products. In addition, sales and technical professionals may obtain Associate and Specialist-level certifications to qualify for additional benefits from QLogic.

Contact Information

QLogic Technical Support for products under warranty is available during local standard working hours excluding QLogic Observed Holidays. For customers with extended service, consult your plan for available hours. For Support phone numbers, see the Contact Support link at <http://support.qlogic.com>.

Support Headquarters

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QLogic Web Site

www.qlogic.com

Technical Support Web Site

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Technical Support E-mail

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Technical Training E-mail

training@qlogic.com

Knowledge Database

The QLogic knowledge database is an extensive collection of QLogic product information that you can search for specific solutions. QLogic is constantly adding to the collection of information in the database to provide answers to your most urgent questions. Access the database from the QLogic Support Center: <http://support.qlogic.com>.

1 Getting Started

SANsurfer Router Manager is a GUI consisting of menus, buttons, and windows that you can use to manage iSR6200 routers from a workstation on Linux®, Windows®, Solaris®, or Mac OS® X platform. You can view and change network, port, security, and mapping configuration for one or more iSR6200 routers. SANsurfer Router Manager shows the most current system information.

This chapter provides information to help you get started using SANsurfer Router Manager. It includes the following sections:

- [“System Requirements” on page 1-2](#)
- [“Connecting the Management Workstation to the Router” on page 1-2](#)
- [“Starting SANsurfer Router Manager” on page 1-5](#)
- [“Connecting SANsurfer Router Manager to the Router” on page 1-6](#)
- [“Getting Help” on page 1-7](#)
- [“Setting Security” on page 1-10](#)
- [“Setting Tree View Options” on page 1-12](#)
- [“Refreshing the Host Configuration” on page 1-13](#)
- [“Exiting SANsurfer Router Manager” on page 1-14](#)

System Requirements

[Table 1-1](#) lists the SANSurfer Router Manager minimum system requirements for the platform, hardware, and software.

Table 1-1. System Requirements

Component	Minimum Requirements
Operating System	One of the following: <ul style="list-style-type: none">■ Windows 2000, 2003■ Windows 2008 (when available)■ Linux Red Hat® Enterprise 3.x■ Linux Red Hat Enterprise 4.x■ Linux Red Hat 5■ SUSE® Linux 9.0 Enterprise■ SUSE Linux 10.0■ Mac OS X■ Solaris® Intel®■ Solaris SPARC®
Memory	256MB or more
Disk Space	150MB per installation
Processor	500MHz or faster
Hardware	RJ-45 Ethernet port, RS-232 serial port (optional)
Internet Browser	To view the help system, the latest version of one of the following: <ul style="list-style-type: none">■ Microsoft® Internet Explorer®■ Mozilla® Firefox®

Connecting the Management Workstation to the Router

This section describes how to connect the management workstation to the router for the first time, which requires the following procedures:

- [“Connecting the Hardware” on page 1-3](#)
- [“Setting the Workstation IP Address” on page 1-3](#)
- [“Configuring the Router Ports” on page 1-4](#)
- [“Updating the Firmware” on page 1-4](#)

Connecting the Hardware

SANsurfer Router Manager requires an Ethernet connection to the router using either of the following hardware configurations:

- Indirect Ethernet connection from the management workstation to the router RJ-45 connector through an Ethernet switch or hub. This requires a 10/100 Base-T straight cable.
- Direct Ethernet connection from the management workstation to the router RJ-45 Ethernet connector. This requires a 10/100 Base-T crossover cable.

For hardware configuration details, refer to the *iSR6200 QLogic intelligent Storage Router (iSR) Installation Guide*.

Setting the Workstation IP Address

The IP address of a new router is 10.0.0.1. To ensure that your workstation is configured to communicate with the 10.0.0 subnet, refer to the following instructions for your workstation.

To set the IP address on a Windows workstation:

1. On the Windows **Start** menu, point to **Settings**, point to **Control Panel**, and then click **Network and Dial-up Connections**.
2. Click **Make New Connection**.
3. Click **Connect to a private network through the Internet**, and then click **Next**.
4. Type the new IP address; for example, 10.0.0.253.

To set the IP address on a Linux or Solaris workstation:

1. Open a command window.
2. Enter the following commands, where *(interface)* is your interface name:

```
ifconfig (interface)  
ipaddress 10.0.0.253  
netmask 255.255.255.0
```

Configuring the Router Ports

To configure router ports, select a Fibre Channel or iSCSI port in the left pane (tree pane), and then complete the Information and Advanced Configuration pages for that port in the right pane. For details, see “FC Ports” on page 3-22 and “iSCSI Ports” on page 3-28.

Updating the Firmware

The router comes with current firmware installed. You can upgrade the firmware from the management workstation as new firmware becomes available. You can update the firmware on one or more router blades either using CLI commands or SANsurfer Router Manager.

To update the firmware using SANsurfer Router Manager:

1. Download the most recent iSR6200 firmware version to your workstation from the QLogic Web site:
<http://driverdownloads.qlogic.com>
2. Check the current firmware version as follows:
 - a. Start SANsurfer Router Manager and connect to the iSR6200 router.
 - b. Select the **Router iSR6200** node in the router tree pane.
 - c. On the **Router iSR6200** page under **Blade x Information**, review the **Software Version**. If the current revision is what you want to replace, continue with [Step 3](#).
3. Launch the FW Update Wizard using one of the following methods:
 - ☐ On the **File** menu, click **FW Update Wizard**.
 - ☐ Press CTRL+F.
4. On the Router Selection dialog box, select the check box corresponding to the router blade (specified by IP address) to update, and then click **Next**.
5. Complete the Firmware File Selection dialog box as follows:
 - a. Click **Browse**, and then navigate to the folder where you saved the firmware files.
 - b. In the Open dialog box, click the appropriate `isr-6200-x_x_x_x.bin` file (where `x_x_x_x` identifies the firmware version), and then click **Open**.
 - c. When the selected firmware file name appears in the **Firmware Image File** box, click **Next**.

6. Use the Confirm Changes dialog box to review the firmware status and confirm the changes as follows:
 - a. Review the list of routers to be updated with the specified firmware file.
 - b. If you want to save a copy of this firmware configuration, click **Save Configuration to File**. Browse to the appropriate directory, enter a file name, and then click **Save**.
7. Click **Next**.

The Firmware Update Status dialog box shows the progress of the firmware updates and performs a security check to verify the changes.
8. In the Security Check dialog box, type the password, and then click **OK**.
9. Review the firmware update status, and then click **Next**.
10. On the final dialog box, click **Finish** to complete the firmware update.

Starting SANsurfer Router Manager

SANsurfer Router Manager startup procedures differ depending on the operating system:

- [Starting SANsurfer Router Manager on Windows](#)
- [Starting SANsurfer Router Manager on Linux or Solaris](#)
- [Starting SANsurfer Router Manager on Macintosh](#)

Starting SANsurfer Router Manager on Windows

On a Windows system, do one of the following to start the SANsurfer tool, which includes the SANsurfer Router Manager user interface.

To start SANsurfer Router Manager on Windows:

Use one of the following options:

- Double-click the **SANsurfer Router Manager** icon on your desktop (if the icon was created during installation):



- On the Windows **Start** menu, point to **All Programs**, point to **QLogic Management Suite**, and then click **SANsurferRouterManager**.

The SANsurfer Router Manager main window opens (see [“Main Window” on page 2-2](#)).

Starting SANsurfer Router Manager on Linux or Solaris

On Red Hat/SUSE Linux and Solaris SPARC/x86 systems, follow these steps to start SANsurfer Router Manager.

To start SANsurfer Router Manager on Linux or Solaris:

1. Ensure that you are in a graphical user environment, such as Xwindows.
2. Open a command terminal.
3. Change to the directory where you installed SANsurfer Router Manager.
4. Type **SANsurferRouterManager**, and then press ENTER.

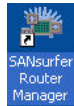
The SANsurfer Router Manager main window opens (see [“Main Window” on page 2-2](#)).

Starting SANsurfer Router Manager on Macintosh

On Macintosh systems, follow these steps to start SANsurfer Router Manager.

To start SANsurfer Router Manager on Macintosh:

1. Open Finder.
2. Browse to the folder where you installed SANsurfer Router Manager.
3. Double-click the **SANsurfer Router Manager** icon:



The SANsurfer Router Manager main window opens (see [“Main Window” on page 2-2](#)).

Connecting SANsurfer Router Manager to the Router

Follow the steps in this section to connect SANsurfer Router Manager to the iSR6200 router.

To connect SANsurfer Router Manager to the iSR6200:

1. Open the Connect to Router dialog box using any of the following methods:
 - ☐ On the toolbar, click **Connect**:



- ❑ Right-click anywhere in the router tree, and then on the shortcut menu, click **Connect**.
- 2. In the Connect to Router dialog box ([Figure 1-1](#)), type the IP address or host name, or click the down arrow to select the address or name of a previously connected host.

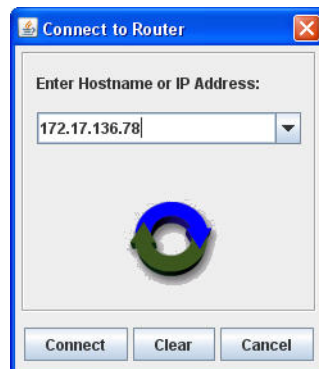


Figure 1-1. Connect to Router Dialog Box

- 3. Click **Connect**.
When SANsurfer Router Manager connects to a new iSR6200 router, it adds the router node to the top of the list in the router tree.

Getting Help

This section provides information about:

- [“Viewing the Help System” on page 1-8](#)
- [“Specifying the Help Browser” on page 1-8](#)
- [“Viewing SANsurfer Router Manager Information” on page 1-9](#)

Viewing the Help System

You can view the application help for SANSurfer Router Manager at any time using one of the following methods:

- To view the help system from the main window, point to the **Help** menu, and then click **Browse Contents**. The help system opens in the browser you selected using the **Set Browser Location** option (see [“Specifying the Help Browser” on page 1-8](#)). The help window contains a navigation pane on the left and a topic pane on the right. In the navigation pane, click one of the following tabs to locate the information you want to display:
 - **Contents** lists topics organized by task, much like the Table of Contents in this user's guide. This list also includes book icons that open and close to show and hide topics related to the book title. Click a closed book icon to open it and see its list of topics. Click an opened book icon to close it and hide its topics. Click the title of any book or topic to view its content in the topic pane.
 - **Index** provides an alphabetically arranged list of keywords. To jump to a keyword, start typing it in the text box. Click any index entry to view a related topic in the topic pane. If a keyword has more than one topic associated with it, a menu lists related topics you can select.
 - **Search** provides access to all topics contained in the help system using advanced search capabilities. Type one or more keywords in the text box, and then press ENTER. The search tool lists all topics that meet your search criteria. Select any topic to view its contents in the topic pane.

NOTE

The search tool accepts Boolean expressions (such as **AND**, **OR**, and **NOT**), as well as nested expressions. It also accepts exact strings entered between quotation marks. It does not support wild cards.

- To view help related to a specific wizard dialog box or window, click the **Help** button, located at the lower-right corner of the dialog box. The appropriate topic opens in a separate window. To view the navigation pane, click the **Show** button, located in the top-right corner of the topic pane. The page replaces the **Show** button with a **Hide** button, which you can click to close the navigation pane without closing the topic window.

Specifying the Help Browser

Follow these steps to specify the Web browser (Internet Explorer or Firefox, for example) that SANSurfer Router Manager launches when you open the help system (see [“Viewing the Help System” on page 1-8](#)).

To specify a browser:

1. On the SANsurfer Router Manager main window, open the **Help** menu, and then click **Set Browser Location**.

The Browser Location dialog box opens (Figure 1-2).

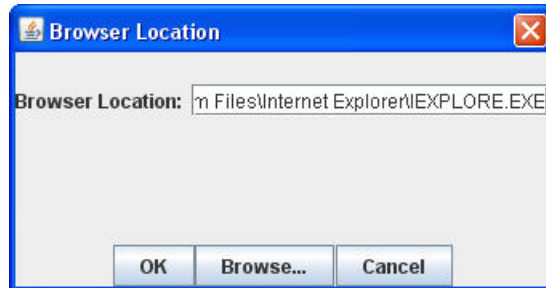


Figure 1-2. Browser Location Dialog Box

2. In the **Browser Location** box, type the location of the browser program file. Be sure to specify the path and file name.

If you do not know the location, click **Browse** to search for and select the browser program file. The Browser Location dialog box shows the new browser path and file name.

3. When you finish choosing your browser, do one of the following:
 - ☐ To save the browser location to the SANsurfer Router Manager configuration file, click **OK**.
 - ☐ To close the Browser Location dialog box without making changes, click **Cancel**.

Viewing SANsurfer Router Manager Information

The About box shows the product version number and QLogic copyright information.

To view information about SANsurfer Router Manager:

1. On the SANsurfer Router Manager main window **Help** menu, click **About**.

The About SANsurfer Router Manager box opens (Figure 1-3).

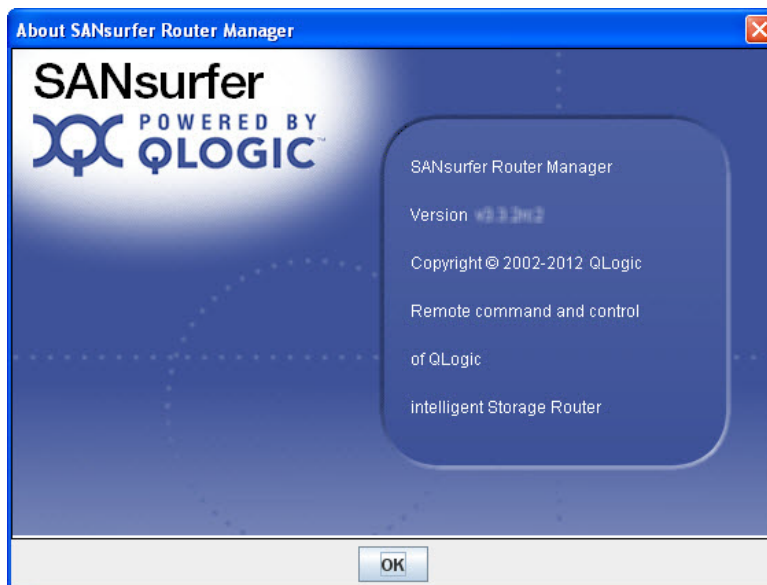


Figure 1-3. About SANsurfer Router Manager Box

The About box provides the following information:

- ☐ Product name
- ☐ Version number
- ☐ Copyright information

2. To close the About box and return to the SANsurfer Router Manager main window, click **OK**.

Setting Security

SANsurfer Router Manager security ensures that any router configuration changes require password authorization. The router management tool prompts you to enter the password when you do any of the following:

- Attempt to save modified router chassis or blade information
- Update the firmware on a selected router blade
- Modify information for [FC Ports](#) or [iSCSI Ports](#)
- Modify LUN mapping or masking parameters
- Rename, enable, or disable any virtual port group
- Run any of the wizards

- Save the router blade's configuration and persistent data as a FRU to a TGZ file
- Restore the router blade's configuration and persistent data from an existing file

NOTE

The default SANSurfer Router Manager access password is `config`. To ensure router security, change this password after installation.

To set the access password:

1. In the router tree, select the router blade for which you want to set the access password.
 2. Click the **Information** tab.
 3. On the Information page's set of vertical tabs on the left, click the lock icon.
- The Security page opens, and shows the host name at the top. [Figure 1-4](#) shows an example.

The screenshot shows the SANSurfer Router Manager interface. The 'Information' tab is selected. On the left, a vertical toolbar contains a lock icon, a key icon, and a padlock icon. The main content area displays the 'Router Name: 172.17.64.82'. Below the router name, there are two sections for password management: 'Set New Password' and 'Data Migration Access'. Each section contains three input fields: 'Current Password', 'New Password', and 'Verify New Password'. At the bottom of the interface, there are several buttons: 'Apply', 'Clear Fields', 'Reboot', 'FW Load', 'Restore Defaults', and 'Reset Mappings'.

Figure 1-4. Setting System Security

4. Under **Application Access**, complete the following boxes:
 - ☐ **Current Password:** Type the existing login password.

NOTE

The default password is `config`.

- ☐ **New Password:** Type the new password.
- ☐ **Verify New Password:** Type the new password again to confirm the new password.

NOTE

If necessary, click **Clear Fields** to clear the typed entries in the Security page text boxes.

5. To update the access password, click **Apply**.

The Apply New Password Confirmation dialog box confirms that the password has been changed.
6. Click **OK** to close the dialog box.

Setting Tree View Options

Use the Customize Tree View dialog box to control the “branches” that are displayed in the router tree in the left pane of SANsurfer Router Manager (see [“Router Tree” on page 2-12](#)).

To set the tree view options:

1. On the **Settings** menu, click **Customize View**.
2. In the Customize Tree View dialog box, select the check box next to each item that you want displayed in the router tree pane. Clear the check box next to each item that you want hidden in the router tree pane.

Figure 1-5 shows an example.

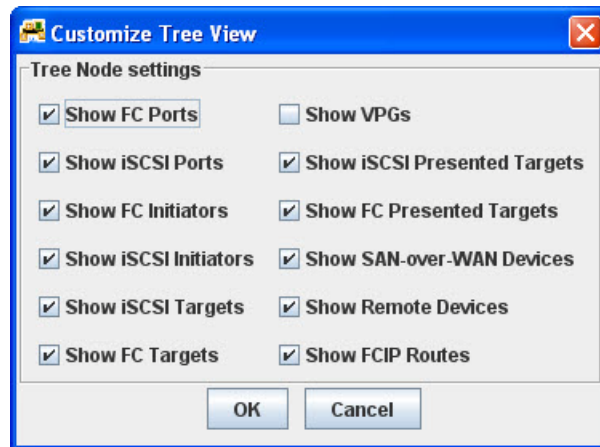


Figure 1-5. Customize Tree View Dialog Box

3. Click **OK** to save your changes and close the dialog box.
SANsurfer Router Manager refreshes the view, and then shows or hides nodes in the router tree pane per your selections.

Refreshing the Host Configuration

The host configuration (including the router tree) shown in the SANsurfer Router Manager interface does not automatically update all configuration changes. To update the interface to view all configuration changes, made either by yourself or another user, choose one of the following options:

- On the toolbar, click the **Refresh** button:



- Right-click the router tree, and then on the shortcut menu, click **Refresh**.

SANsurfer Router Manager refreshes the view of all connected iSR6xxx routers.


In addition, if another user makes configuration changes on the host while you are connected, SANsurfer Router Manager automatically opens the Refresh dialog box (Figure 1-6), which identifies those changes. To manually update the view, click **Yes**.



Figure 1-6. Refresh Dialog Box

Exiting SANsurfer Router Manager

To exit SANsurfer Router Manager, choose one of the following options:

- On the SANsurfer Router Manager main window, open the **File** menu, and then click **Exit**.
- On the SANsurfer Router Manager main window, click the **Close** button  in the upper right corner.
- Press the ALT+X keys.

2 Understanding the User Interface

This chapter describes the components of the SANsurfer Router Manager user interface, including:

- [“Main Window” on page 2-2](#)
- [“Menu Bar” on page 2-3](#)
- [“Toolbar” on page 2-7](#)
- [“Shortcut Menus” on page 2-8](#)
- [“Tree Pane” on page 2-11](#)
- [“Status Icons and Text” on page 2-15](#)

Main Window

The SANsurfer Router Manager interface includes a menu bar, a toolbar, a tree pane, and an information/configuration/data pane with tabbed pages, as illustrated in [Figure 2-1](#) and described in [Table 2-1](#).

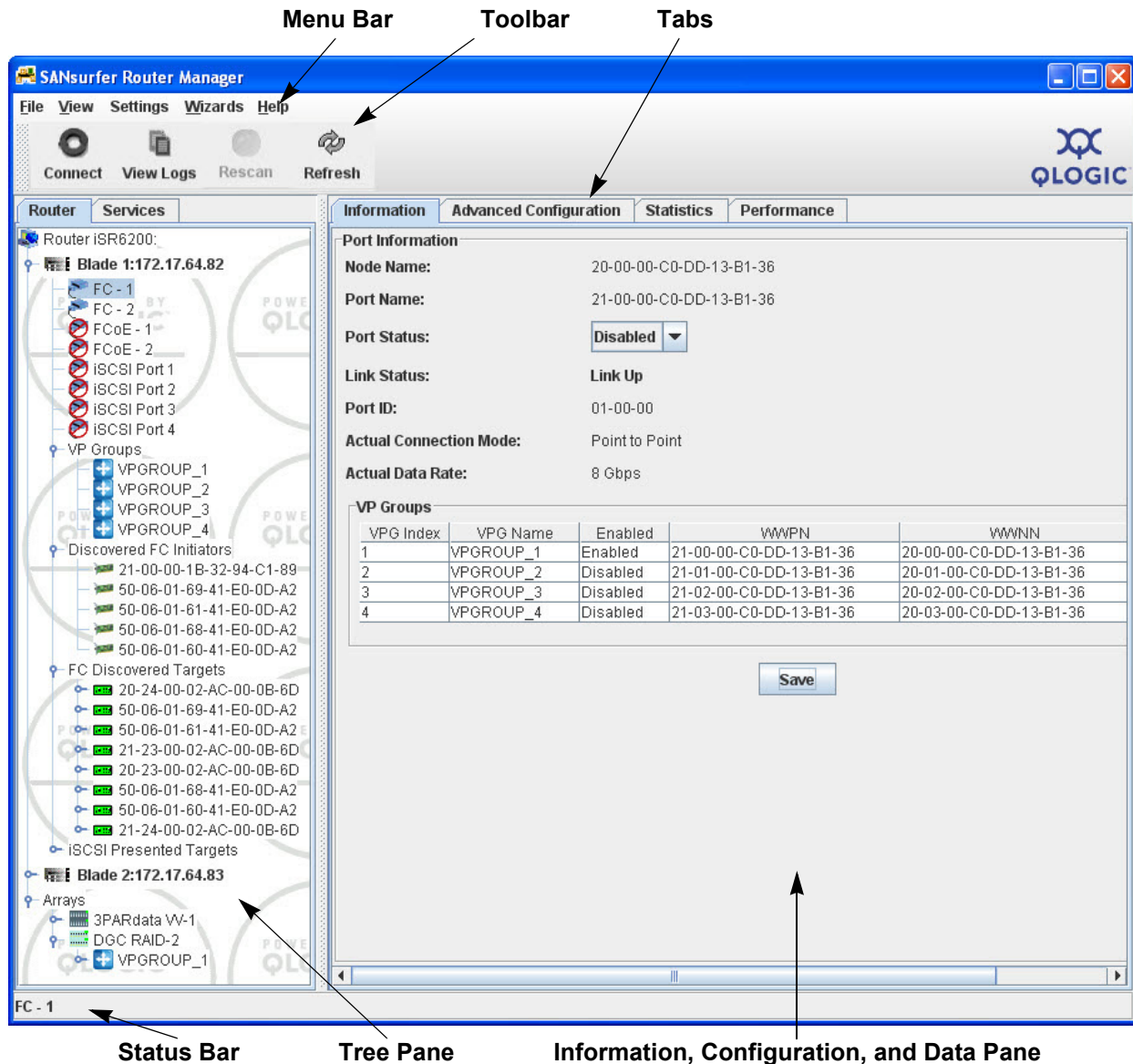


Figure 2-1. SANsurfer Router Manager Interface

Table 2-1. Interface Description

Item	Description
Menu Bar	The menu bar provides access to system functions and wizards. For details, see “Menu Bar” on page 2-3 .
Toolbar	The toolbar buttons provide quick access to common functions: Connect, View Logs, and Refresh. For details, see “Toolbar” on page 2-7 .
Shortcut Menu	The shortcut menu opens when you right-click anywhere inside the tree pane, and contains options available elsewhere in SANsurfer Router Manager. For details, see “Shortcut Menus” on page 2-8 .
Tabs	Tabs in the right pane provide access to pages related to the component selected in the tree (left) pane. To bring a hidden page to the front, click its tab.
Status Bar	The status bar at the bottom of the window provides status information for the router.
Tree Pane	<p>The Router tree in the left pane shows the connected systems and their components. The Services tree shows data migration job information.</p> <p>An entry handle located to the left of a tree “branch” or node indicates that it is expandable. Click an entry handle or double-click the entry to expand or collapse a tree branch. To resize this pane, click and drag the window border. For details, see “Tree Pane” on page 2-11.</p>
Information, Configuration, and Data Pane	The right pane contains information and data related to the currently selected component in the tree pane. Some data is configurable; other data is read-only. To resize this pane, click and drag the window border. For details, see Chapter 3 Viewing Router Information .

Menu Bar

The SANsurfer Router Manager menu bar contains the **File**, **View**, **Settings**, **Wizards**, and **Help** menus.

File Menu

The **File** menu provides the following options:

- **FW Update Wizard** launches the FW Update Wizard, which enables you to update the iSR6200 router's firmware image. (For details, see [“Updating the Firmware” on page 1-4.](#))
- **Save FRU** preserves the router's configuration and persistent data by saving it to a file. (For details, see “Saving and Restoring Blade Configuration” in the help system.)
- **Restore FRU** recovers the router's configuration and persistent data from a file. (For details, see “Saving and Restoring Blade Configuration” in the help system.)
- **Import Host-LUN Info** loads the XML output from the host tool utility containing host volume information.
- **Save Capture** saves logs and configuration information for Support.
- **Exit** closes SANsurfer Router Manager.

View Menu

The **View** menu provides the following option:

- **View Logs** provides access to the system logs and data migration logs. (For message descriptions, see [Appendix B Log Messages.](#))

Settings Menu

The **Settings** menu provides the following option:

- **Broadcast** opens the Broadcast Settings dialog box, which enables you to configure the broadcast options. The workstation sends broadcast messages to locate routers within the same IP subnet as the workstation running SANsurfer Router Manager. (For details, see “Setting Broadcast Options” in the help system.)
- **Customize View** opens the Customize Tree View dialog box where you can select items to show or hide in the [Router Tree](#) and [Services Tree](#). (For details, see [“Setting Tree View Options” on page 1-12.](#))

Wizards Menu

NOTE

The options that are available on the **Wizards** menu depend on the router to which SANsurfer Router Manager is connected and the features licensed for the connected router.

The **Wizards** menu provides the following options:

- **Add Initiator Wizard** launches the Add Initiator Wizard, which enables you to configure the IP address and other parameters for an iSCSI initiator.
- **Add Host Entity Wizard** launches the Add Host Entity Wizard, which enables you to create a host entity: a logical construct consisting of zero or more initiator ports for one or more protocols. The host entity simplifies the configuration process and prevents configuration errors during LUN masking.
- **LUN Presentation Wizard** launches the Target Presentation/LUN Mapping Wizard, which enables you to map an initiator to LUNs.
- **LUN Unpresentation Wizard** also launches the Target Presentation/LUN Mapping Wizard, which enables you to remove mapping between target LUNs and iSCSI initiators.
- **Host's LUN Presentation Wizard** also launches the Target Presentation/LUN Mapping Wizard, which enables you to map a host entity: a group of initiator ports useful in cluster environments that have the same LUNs presented to multiple initiator ports.
- **Host's LUN Unpresentation Wizard** also launches the Target Presentation/LUN Mapping Wizard, which allows you to remove the source array LUN mapping to a host entity.
- **Discover iSCSI Target** launches the Discover iSCSI Target Wizard, which enables you to discover targets by IP address. The target is added to the discovered targets list.
- **Configure Migration Jobs** opens the Create Data Migration Job dialog box, which enables you to schedule an individual data migration job or multiple jobs to run in batch mode. (Data migration solution is an optional, licensed feature of SANsurfer Router Manager.)
- **Configure Verifying Jobs** launches the Verify Migration Job wizard, which enables you to configure verification jobs to compare data residing on two LUNs. (Data migration is an optional, licensed feature of SANsurfer Router Manager.)
- **Add Group** opens the Create New Group dialog box, which enables you to create a named entity to group data migration jobs. You can create up to eight groups, where each group can contain up to 256 data migration jobs. (Data migration is an optional, licensed feature of SANsurfer Router Manager.)
- **Start Serial Scheduled Job(s)** opens the Serial Data Migration Jobs dialog box, which enables you to schedule a start time for a data migration job. (Data migration is an optional, licensed feature of SANsurfer Router Manager.)

- **License an Array** launches the Data Migration License Array wizard, which enables you to select an array for unrestricted data migration capacity. The router must have been provided an array license. (Data migration is an optional, licensed feature of SANsurfer Router Manager.)
- **Scrubbing LUN** opens the Create LUN Scrubbing Job dialog box, which enables you to wipe out data residing on the LUN. This feature is primarily used to erase confidential information on the LUN. (Data migration is an optional, licensed feature of SANsurfer Router Manager.)
- **Create Data Management LUN** launches the Create Data Management LUN Wizard, which enables you to create a data management LUN (DML) that supports remote migration (asynchronous replication). (Data migration is an optional, licensed feature of SANsurfer Router Manager.)
- **Remove Data Management LUN** launches the Remove Data Management LUN Wizard, which enables you to delete a DML used for remote migration. (Data migration is an optional, licensed feature of SANsurfer Router Manager.)
- **Target Map Wizard** launches the Target Map Wizard, which enables you to create a Fibre Channel presented target for online data migration. (Data migration is an optional, licensed feature of SANsurfer Router Manager.)
- **Target Unmap Wizard** launches the Unmap Target wizard to unrepresent a Fibre Channel target.
- **iSCSI Target Map Wizard** opens the iSCSI Target Global Presentation dialog box to present multiple iSCSI targets (with a single LUN per target) into a single Fibre Channel target.
- **Import Remote Array Wizard** launches the Import Remote Array Wizard to import a remote array onto the local router. By default, the imported array node lists all of the available LUNs on the local router as destination LUNs.
- **Add Remote Peer Wizard** launches the Add Remote Peer Wizard to assign a local router to a remote router as a peer.
- **Remove Remote Peer Wizard** launches the Remove Remote Peer Wizard to remove a local-to-remote router peer assignment.
- **Map Remote Initiator/Target Wizard** launches the Map Remote Wizard to map an initiator to a target device, one of which is on a remote router.
- **Unmap Remote Initiator/Target Wizard** launches the Unmap Remote Wizard to delete an initiator-to-target device mapping.
- **FCIP Route Add** launches the FCIP Route Add Wizard, which allows you to configure a new FCIP route.
- **FCIP Route Remove** launches the FCIP Route Remove Wizard, which allows you to select an FCIP route to delete.

NOTE

Detailed procedures for the wizards are included in the “Using the Wizards” section of the help system.

Help Menu





The **Help** menu provides the following options:

- **Set Browser Location** specifies the browser that launches when you view the help system for SANsurfer Router Manager. For procedures, see [“Specifying the Help Browser” on page 1-8](#).
- **Browse Contents** launches the help system for SANsurfer Router Manager. For procedures, see [“Viewing the Help System” on page 1-8](#).
- **About** shows the tool version information. For procedures, see [“Viewing SANsurfer Router Manager Information” on page 1-9](#).

Toolbar

The SANsurfer Router Manager toolbar buttons (see [Table 2-2](#)) provide quick access to common functions: connecting, viewing log files, and refreshing the current display. You can relocate the toolbar on the window by clicking and dragging the handle at the left edge of the toolbar.

Table 2-2. Toolbar Buttons

Button	Description
	Click Connect to add an iSR6xxx router to the router tree. For procedures, see “Connecting SANsurfer Router Manager to the Router” on page 1-6 .
	Click View Logs to view the system log and data migration log. For message descriptions see Appendix B . For procedures, see “Using the Router Log” in the help system.
	Click Rescan to rediscover all target devices on both the Fibre Channel and iSCSI interfaces (ports).
	Click Refresh to update the display with current information. For procedures, see “Refreshing the Host Configuration” on page 1-13 .

Shortcut Menus

The shortcut menus (Figure 2-2) provide quick access to actions and wizards available elsewhere in SANsurfer Router Manager. To open a shortcut menu, right-click anywhere within the tree pane on the Router or Services pages.

NOTE

The options that are available on the shortcut menus depend on the router to which SANsurfer Router Manager is connected, the features licensed for the connected router, and the item currently selected in the router tree.

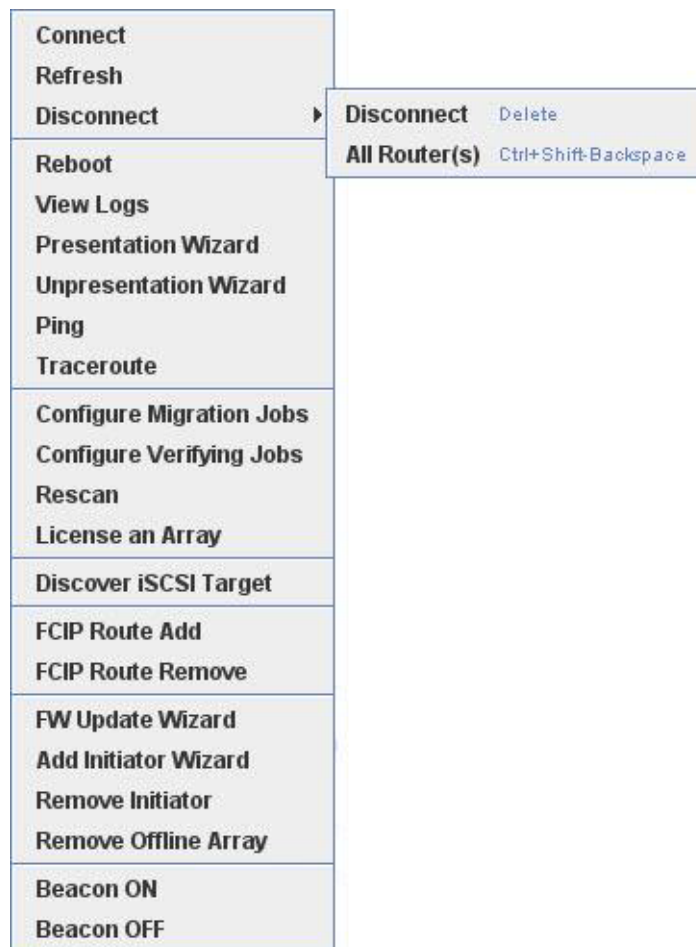


Figure 2-2. Shortcut Menu (Example)

Table 2-3 provides a description of each shortcut menu option, listed alphabetically.

Table 2-3. Shortcut Menu Options

Option	Description
Add Group ^a	Opens a dialog box for specifying the name of a new data migration job group.
Add Host Entity Wizard	Launches a wizard for creating a host entity, a logical construct consisting of zero or more initiator ports for one or more protocols. (For procedures, see “Add Host Entity Wizard” in the help system.)
Add Initiator Wizard	Launches a wizard for entering an iSCSI initiator into the system database (For procedures, see “Add Initiator Wizard” in the help system).
Add Remote Peer Wizard	Launches a wizard to assign a local router to a remote router as a peer.
Beacon OFF	Stops flashing the iSR6200 router beacon.
Beacon ON	Starts flashing the iSR6200 router beacon to locate the physical router blade. (For details, see “Locating a Router Blade” in the help system.)
Configure Migration Jobs ^a	Opens a dialog box for scheduling an individual data migration job or multiple jobs to run in batch mode.
Configure Verifying Jobs ^a	Launches a wizard for configuring verification jobs to compare data residing on two LUNs.
Connect	Adds an iSR6xxx router to the router tree. For procedures, see “Getting Help” on page 1-7.
Create Data Management LUN ^a	Launches a wizard for adding a data management LUN (DML) that supports remote migration (asynchronous replication).
Disconnect	Disconnect detaches from the iSR6200 router, removing it from the router tree. All Router(s) detaches from all iSR6200 routers and removes them from the router tree.
Discover iSCSI Target	Launches a wizard to specify the IP address of the iSCSI target to be discovered. The target is added to the discovered targets list.
FCIP Route Add	Launches the FCIP Routes Add Wizard, which allows you to configure a new FCIP route.

Table 2-3. Shortcut Menu Options (Continued)

Option	Description
FCIP Route Remove	Launches the FCIP Routes Remove Wizard, which allows you to select an FCIP route to delete.
FW Update Wizard	Launches a wizard for updating the router's firmware (For procedures, see "FW Update Wizard" in the help system).
Import Remote Array Wizard	Opens the Import Remote Array Wizard dialog box to select a remote array to import to this router.
iSCSI Target Map Wizard	Opens the iSCSI Target Global Present dialog box to present multiple iSCSI targets (with a single LUN per target) into a single Fibre Channel target.
License an Array	Launches a wizard to select an array for unrestricted data migration capacity.
LUN Presentation Wizard	Launches a wizard for presenting (mapping) LUNs to iSCSI initiators.
LUN Unpresentation Wizard	Launches a wizard for unrepresenting (unmapping) LUNs from iSCSI initiators.
Map Remote Initiator/Target Wizard	Launches a wizard that allows you to map an initiator to a target device, one of which is on a remote router.
Ping	Initiates a ping from the specified Ethernet port (management, GE1, or GE2) to a specified IP address. (For details, see "Ping-ing a Remote System" in the help system.)
Reboot	Restarts the iSR6200 router.
Refresh	Updates the window with current information for all connected storage routers. For procedures, see "Refreshing the Host Configuration" on page 1-13 .
Remove Data Management LUN ^a	Launches the Remove Data Management LUN Wizard, which enables you to delete a DML used for remote migration.
Remove Group[*]	Deletes the currently selected data migration job group.
Remove Host Entity	Deletes the currently selected host entity.
Remove Initiator	Removes the selected iSCSI initiator. This option is available only when an initiator is selected (highlighted) in the router tree. For procedures, see "Removing a Device" in the help system.
Remove Offline Array	Deletes the selected offline storage array. This option is available only when an offline array is selected (highlighted) in the router tree. (For procedures, see "Removing an Offline Array" in the help system.)

Table 2-3. Shortcut Menu Options (Continued)

Option	Description
Remove Offline Target	Deletes the selected offline Fibre Channel target. This option is available only when an offline Fibre Channel target is selected (highlighted) in the router tree. (For procedures, see “Removing a Device” in the help system.)
Remove Remote Peer Wizard	Launches a wizard to remove a local-to-remote router peer assignment.
Rename Group^a	Opens a dialog box where you can enter a different name for the currently selected data migration job group.
Rescan	Causes the router to rediscover all target devices on both the Fibre Channel and iSCSI interfaces (ports).
Scrubbing LUN^a	Opens a dialog box that enables you to wipe out data residing on the LUN.
Traceroute	Initiates a traceroute from the specified port (management, GE1, or GE2) to a specified IP address. (For procedures, see “Tracing a Route” in the help system.)
Unmap Remote Initiator/Target Wizard	Launches a wizard that allows you to delete an initiator-to-target device mapping.
View Logs	Opens the view logs window.

^a Data migration is an optional, licensed feature of SANsurfer Router Manager.

Tree Pane

The left pane of the SANsurfer Router Manager window contains a “tree” view of the router and services. The tree pane contains two tabbed pages, Router and Services:

- The tree on the Router page shows the connected systems and their components.
- The tree on the Services page shows data migration job information. (Data migration is a licensed feature of SANsurfer Router Manager.)

An entry handle located to the left of a tree “branch” or node indicates that it is expandable. Click an entry handle or double-click the entry to expand or collapse a tree branch. To resize this pane, click and drag the window border.

Router Tree

The router tree (Figure 2-3) appears in the left pane of the SANsurfer Router Manager window when the **Router** tab is selected.

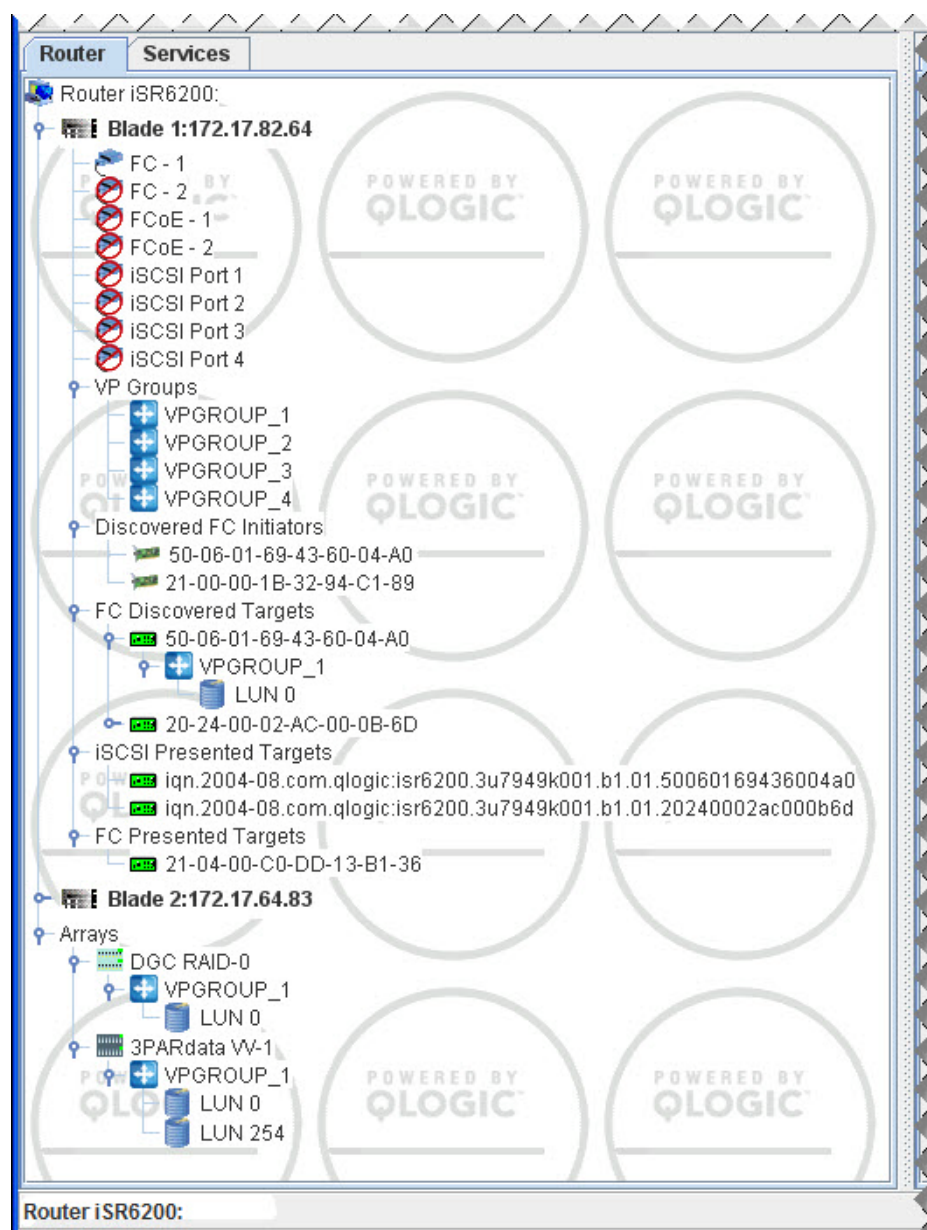


Figure 2-3. Router Tree Pane

The router tree contains the connected iSR6xxx routers and the following components for each router:

- “Router Chassis” on page 2-16
- “Router Blade” on page 2-16
- “Remote Peers” on page 2-17
- “FC, FCoE, and iSCSI Ports” on page 2-17
- “VP Groups” on page 2-18
- “Discovered FC and iSCSI Initiators” on page 2-18
- “FC and iSCSI Discovered Targets” on page 2-18
- “iSCSI and FC Presented Targets” on page 2-19
- “SAN-over-WAN Devices” on page 2-19
- “Remote Mapped Devices” on page 2-19
- “FCIP Routes” on page 2-20
- “Arrays” on page 2-20
- “Data Management LUNs” on page 2-20
- “Host Entities” on page 2-20

NOTE

You can choose which components to have displayed in the router tree. For details, see [“Setting Tree View Options” on page 1-12](#).

Click a component in the router tree in the left pane to view component details in the pages in the right pane (the information, configuration, and data pane; [Figure 2-4](#) shows an example).

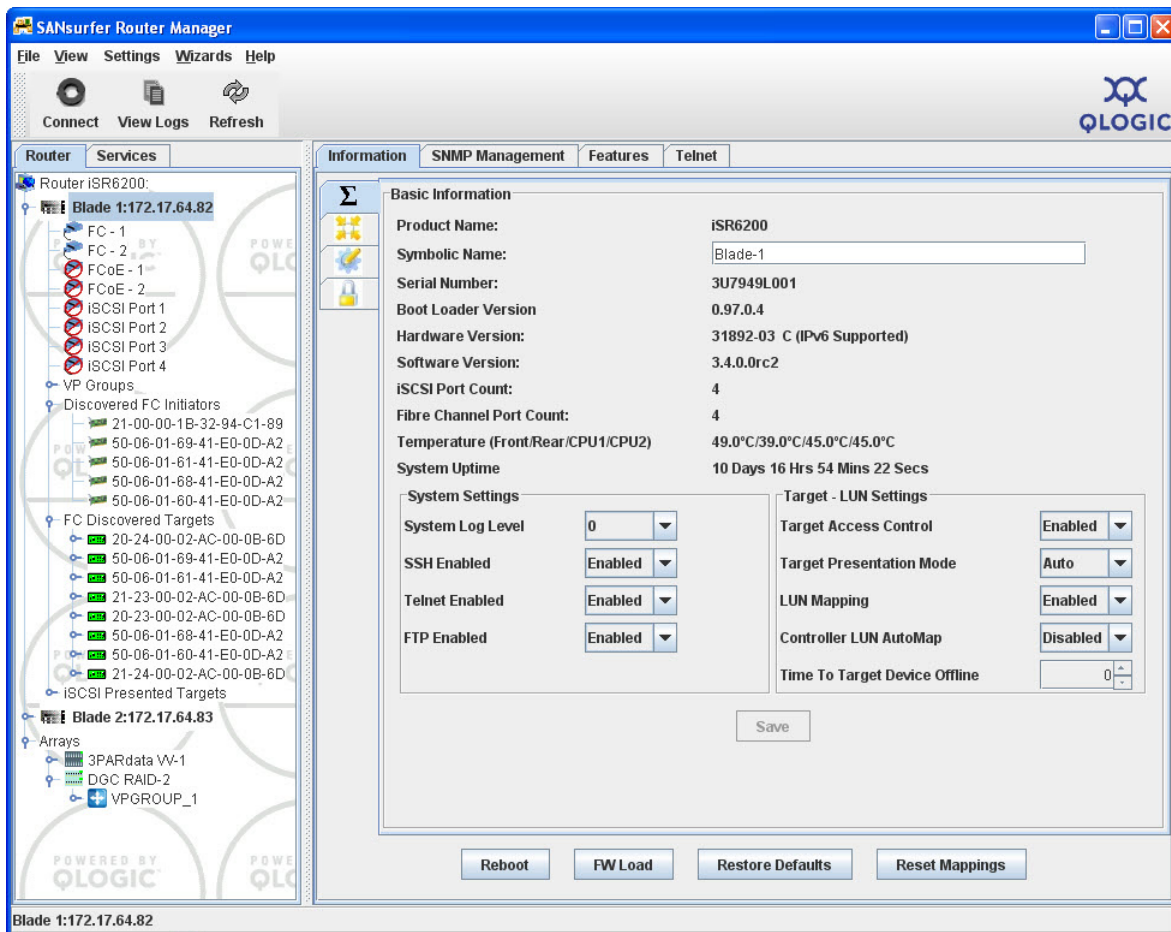


Figure 2-4. Component Information Pane Example

Component information for the selected router includes router chassis, blade, port, status, and discovered device details.

Services Tree

The services tree ([Figure 2-5](#)) appears in the left pane of the SANsurfer Router Manager window when the **Services** tab is selected. Services are licensed features of SANsurfer Router Manager.

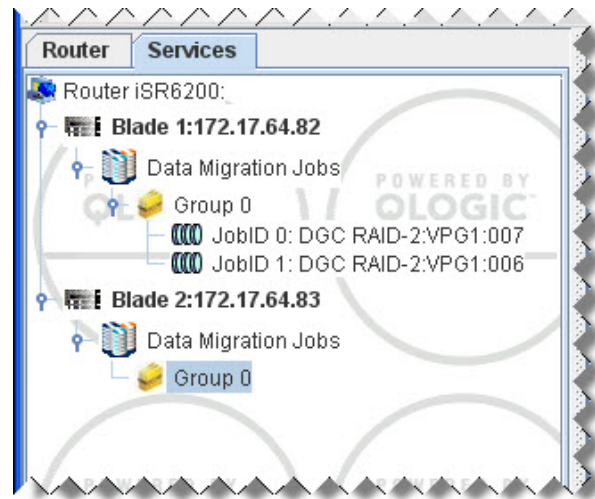


Figure 2-5. Services Tree Pane (Example)

Click a component in the services tree in the left pane to view service details in the pages in the right pane (the information, configuration, and data pane). Service information includes details of the data migration jobs that are active, synchronizing, and completed. For details, see [Chapter 4 Viewing Service Information](#).

Status Icons and Text

The router, and services trees contains icons with nodes you can select to obtain the status of each router and components.

Router Tree Icons

The following sections identify the status icons and text contained in the router tree:

- [“Router Chassis” on page 2-16](#)
- [“Router Blade” on page 2-16](#)
- [“Remote Peers” on page 2-17](#)
- [“FC, FCoE, and iSCSI Ports” on page 2-17](#)
- [“VP Groups” on page 2-18](#)
- [“Discovered FC and iSCSI Initiators” on page 2-18](#)

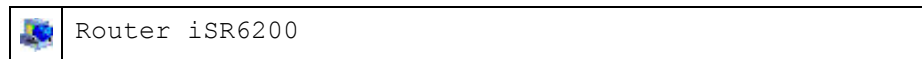
- “FC and iSCSI Discovered Targets” on page 2-18
- “iSCSI and FC Presented Targets” on page 2-19
- “SAN-over-WAN Devices” on page 2-19
- “Remote Mapped Devices” on page 2-19
- “FCIP Routes” on page 2-20
- “Arrays” on page 2-20
- “Data Management LUNs” on page 2-20
- “Host Entities” on page 2-20

Router Chassis

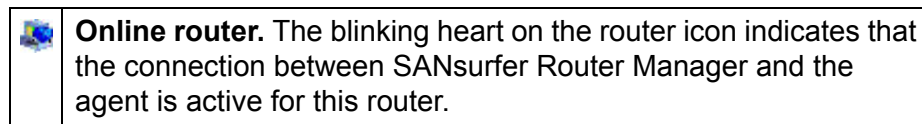
Located at the root folder within the router tree, each router node shows the following:

- **Router status icon** indicates an operational connection (blinking heartbeat).
- **Router model** identifies the model: iSR6200.

Example:



Router icons

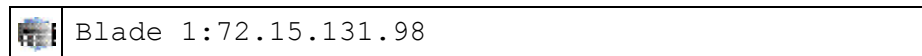


Router Blade

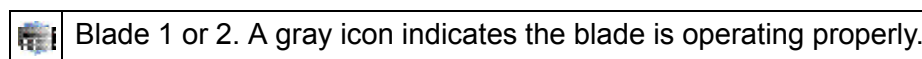
Nested beneath the **Router** node, the iSR6200 shows one or two router blades. Each **Blade** node shows the following:


- **Blade status icon** colors indicate the blade's operational status.
- **Blade number** in chassis, either 1 or 2.
- **IP address** assigned to the blade.

Example:



Blade icons




	Blade 1 or 2. A red icon indicates the blade is not operating properly.
---	---

Remote Peers



Nested beneath the **Blade** node, the **Remote Peers** nodes show the following:

- **Remote peer status icon** colors indicate the remote peer's operational status.
- **IP address** assigned to the remote peer router.

Example:

	172.17.54.99
---	--------------

Remote peer icons




	A gray icon indicates the remote peer is operating properly.
	A red icon indicates the remote peer is not operating properly.

FC, FCoE, and iSCSI Ports

Nested beneath the **Blade** node, port nodes show the following:

- **FC Port *n*** is the Fibre Channel port number; the router can support up to two Fibre Channel ports.
- **FCoE Port *n*** is the Fibre Channel over Ethernet (FCoE) port number; the router can support up to two FCoE ports.
- **iSCSI Port *n*** is iSCSI port number; the router can support up to four iSCSI ports.


Port icons

	FC Port <i>n</i> is the port connection 1 or 2. To determine the port status, select the port node in the router tree. On the port's Information page, the Link Status field identifies the status as either Link Up or Link Down .
	FCoE Port <i>n</i> is the port connection 1 or 2. To determine the port status, select the port node in the router tree. On the port's Information page, the Link Status field identifies the status as either Link Up or Link Down .
	iSCSI Port <i>n</i> is the port connection 1, 2, 3, or 4. To determine the port status, select the port node in the router tree. On the port's Information page, the Link Status field identifies the status as either Link Up or Link Down .

VP Groups

Nested beneath the **Blade** node, VP Groups nodes identify virtual port groups (VPGs). Most arrays limit the number of LUNs presented to a single host. You can enable and configure these VPGs to increase the number of supported LUNs on a storage array.


Example:

	VPGROUP_1
---	-----------


Discovered FC and iSCSI Initiators

Nested beneath the **Blade** node, the **Discovered FC Initiators** and **Discovered iSCSI Initiator** nodes identify the initiators logged into the router.

Example:

	iqn.1991-05.com:microsoft:winhaz14
---	------------------------------------



Initiator icons

	iqn.nnnn-nn.com.xxxxx:xxxnnnn is the initiator connection. To determine the connection status, select the initiator node in the router tree. On the initiator's Information page, the Status box identifies the status as either Logged In or Logged Out .
---	--



FC and iSCSI Discovered Targets

Nested beneath the **Blade** node, **FC Discovered Targets** and **iSCSI Discovered Targets** nodes identify discovered targets that the router logged in.

Examples:

	22000-00-11-C6-2E-4B-BA (Fibre Channel target)
	iqn.2003-10.com.lefthandnetworks:qlogic:3744:volume1 (iSCSI target)


FC and iSCSI discovered target icons

	Target ID indicates the router is logged into the Fibre Channel or iSCSI discovered target.
	Target ID indicates the Fibre Channel or iSCSI target is offline from the router.



LUN icons

Nested beneath each Fibre Channel or iSCSI target, the LUN nodes identify each LUN.

Example:

	LUN (0)
---	---------

LUN icons


	LUN online.
	LUN attached to offline targets.

iSCSI and FC Presented Targets



Nested beneath the **Blade** node, **iSCSI Presented Targets** and **FC Presented Targets** nodes identify one type of target:

- Presented (targets that the router present to the hosts)

Example:

	iqn.2004-08.com.qlogic:isr6200.0823e00015.r1.02.2100000c50a660f1
---	--


iSCSI and Fibre Channel presented target icons

	Target ID indicates the iSCSI or Fibre Channel presented target is online.
	Target ID indicates the iSCSI or Fibre Channel presented target is offline from the router.



SAN-over-WAN Devices

Nested beneath the **Blade** node, the **SAN-over-WAN Devices** nodes identify devices that are local to the router.

Example:

	50-01-43-80-11-36-70-1E
---	-------------------------


SAN-over-WAN device icons

	Device ID indicates that the SAN-over-WAN device is presented.
	Device ID indicates that the SAN-over-WAN device is offline.



Remote Mapped Devices

Nested beneath the **Blade** node, the **Remote Mapped Devices** nodes identify devices that are connected to a remote router and are mapped with the local devices.

Example:

	50-01-43-80-11-36-70-1A
---	-------------------------



Remote mapped device icons

	Device ID indicates that the remote mapped device is presented.
	Device ID indicates that the remote mapped device is offline.

FCIP Routes

Nested beneath the **Blade** node, FCIP Route nodes identify Fibre Channel over IP (FCIP) routes. A maximum of two FCIP routes are allowed.



Example:

	FCIP Route Info <i>n</i> is enabled.
	FCIP Route Info <i>n</i> is disabled.





Arrays

Nested beneath the **Router** node, the **Arrays** nodes identify connected storage arrays.

Examples:

	HP HSV200-0
	HP HSV200-0


Array icons:

	Array is specified as either a “source” or a “source+destination” type.
	Array is specified as a “destination” type.
	Array type is unknown.
	Array is offline.

Data Management LUNs

Nested beneath the **Router** node, the iSR6200 shows one or more data management LUNs. Each **Data Management LUN** node shows the WWULN of LUNs you have specified as data management LUNs.

Example:

	60-06-01-60-CD-31-18-00-29-E9-4D-4A-F7-DF-11
---	--

Host Entities

Nested beneath the **Router** node, the iSR6200 shows one ore more host entities. Each **Host Entity** node shows the server’s user-defined alias name.

Example:



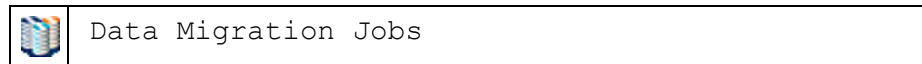
Services Tree Icons

The following sections identify the status icons and text contained in the services tree.

Data Migration Jobs

Nested beneath the **Router** node, the **Data Migration Jobs** node identifies the data migration, compare, and scrubbing jobs for all data migration groups on the iSR6200.

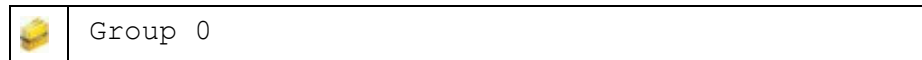
Example:



Groups

Nested beneath the **Data Migration Jobs** node, the **Group** nodes identify the default (**Group 0**) and user-created data migration groups.

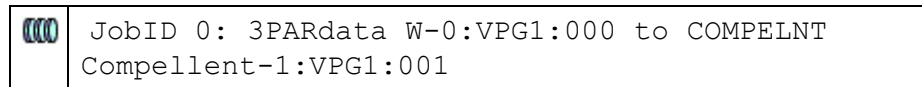
Example:



JobID x

Nested beneath the **Group** node, the **JobID x** nodes identify data migration jobs by number.

Example:



3

Viewing Router Information

SANsurfer Router Manager lets you monitor and manage the iSR6200 router—as well as its blades, ports, and connected devices—by viewing and selecting components in the router tree (for details, see [“Tree Pane” on page 2-11](#)). The following sections describe the windows used to view these router components:

- [“Router iSR6200 Chassis” on page 3-2](#)
- [“Router Blades” on page 3-6](#)
- [“Remote Peers” on page 3-20](#)
- [“FC Ports” on page 3-22](#)
- [“FCoE Ports” on page 3-28](#)
- [“iSCSI Ports” on page 3-28](#)
- [“VP Groups” on page 3-36](#)
- [“Discovered FC Initiators” on page 3-37](#)
- [“Discovered iSCSI Initiators” on page 3-38](#)
- [“FC Discovered Targets” on page 3-41](#)
- [“iSCSI Discovered Targets” on page 3-47](#)
- [“iSCSI Presented Targets” on page 3-48](#)
- [“FC Presented Targets” on page 3-50](#)
- [“SAN-over-WAN Devices” on page 3-51](#)
- [“Remote Mapped Devices” on page 3-53](#)
- [“Arrays” on page 3-53](#)
- [“FCIP Routes” on page 3-59](#)
- [“Data Management LUNs” on page 3-69](#)
- [“Host Entities” on page 3-71](#)

Router iSR6200 Chassis

The top of the router tree shows the iSR6200 router chassis configuration for each router. In the right pane, the [Router iSR6200](#) and [License Info](#) pages provide router details.

Router iSR6200

To view the chassis, blade, and power cooling module information, click the router node in the router tree, and then click the Router iSR6200 page in the right pane. [Figure 3-1](#) shows an example of the Router iSR6200 page.

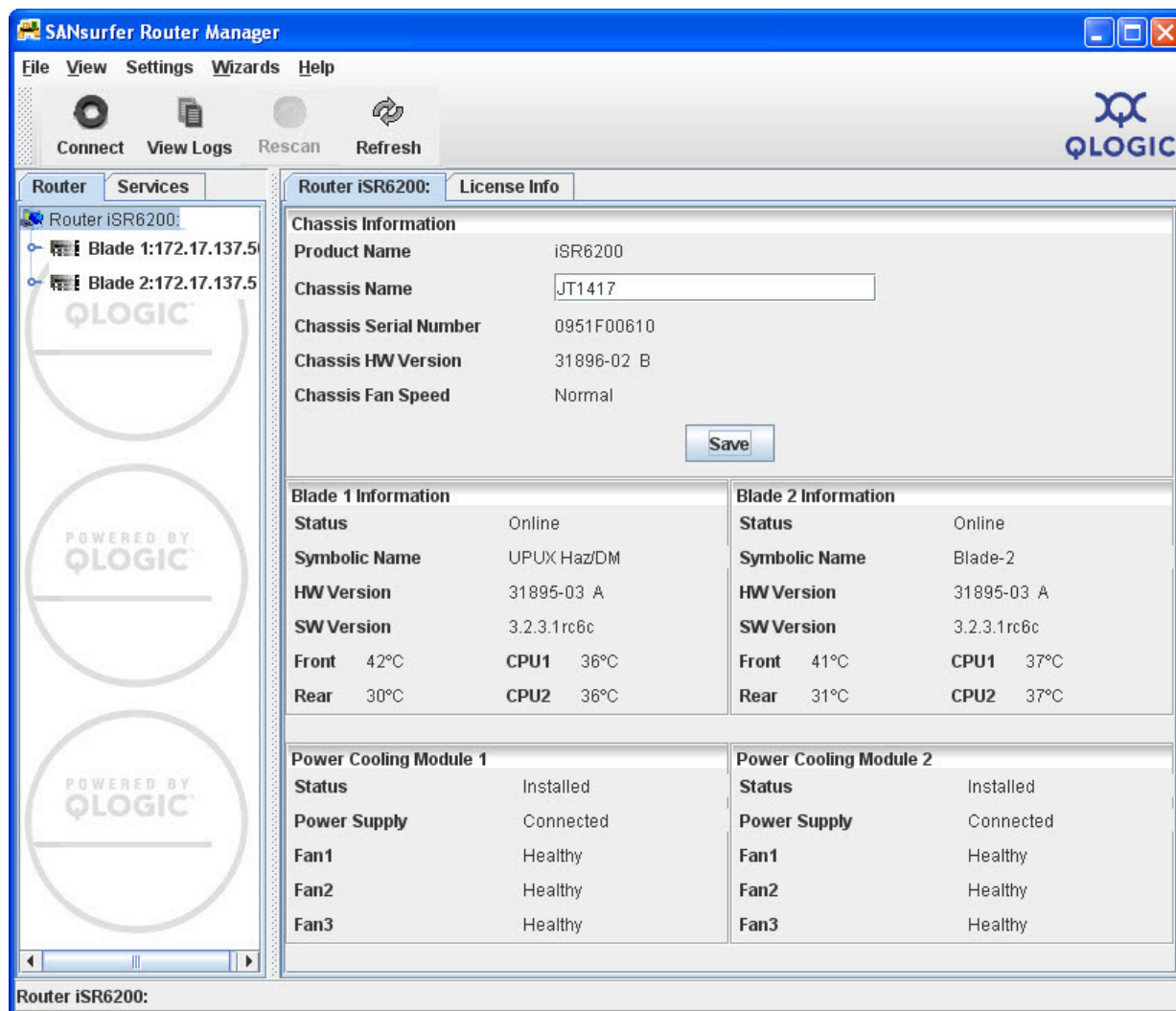


Figure 3-1. Router Chassis: Router iSR6200 Page

The Router iSR6200 page contains the following sections:

- [“Chassis Information” on page 3-3](#)
- [“Blade x Information” on page 3-3](#)
- [“Power Cooling Module x” on page 3-4](#)

Chassis Information

The **Chassis Information** section of the Router iSR6200 page provides the following that is common to both blades contained in the chassis:

- **Product Name** indicates iSR6200 for the iSR6200 router, which is the product name saved to the chassis serial EEPROM in manufacturing.
- **Chassis Name** box enables you to optionally specify a name for the chassis. (For details, see “Assigning a Chassis Name” in the help system.)
- **Chassis Serial Number** specifies the serial number assigned to the iSR6200 router in manufacturing.
- **Chassis HW Version** specifies the iSR6200 router chassis hardware version.
- **Chassis Fan Speed** indicates the iSR6200 router chassis fan speed: Normal or High.

Blade x Information

The **Blade x Information** section of the Router iSR6200 page provides the following information about each router blade:

- **Status** indicates the blade status: Online or Offline.
- **Symbolic Name** specifies the user-defined symbolic name for the chassis blade.
- **HW Version** identifies the hardware version of the blade.
- **SW Version** identifies the version of firmware installed on the chassis blade.
- **Front** indicates the temperature the internal sensors detect at the front of the chassis blade.
- **Rear** indicates the temperature the internal sensors detect at the back of the chassis blade.
- **CPU1** indicates the temperature the internal sensors detect on the first CPU.
- **CPU2** indicates the temperature the internal sensors detect on the second CPU.

Table 3-1 shows the internal temperature limits set to trigger events or alerts.

Table 3-1. Internal Temperature Sensor Limits

Sensor	High Fan Speed Temperature	Low Fan Speed Recovery Temperature	Critical Temperature (power off)	SMB_Alert Recovery Temperature
Front	60°C	55°C	70°C	55°C
Rear	45°C	45°C	55°C	40°C
CPU1	60°C	55°C	68°C	55°C
CPU2	60°C	55°C	68°C	55°C

Table Notes

High Fan Speed Temperature—When a sensor detects a temperature that exceeds this value, the fans runs at their maximum speed. The system logs an event and the Alert LED blinks five times every two seconds.

Low Fan Speed Recovery Temperature—When the fans are running at their maximum speed and all sensors report values less than this value, the fans return to normal speed.

Critical Temperature—When a sensor detects a temperature that exceeds this value, the system powers down the blade. When this happens, the CPUs enter sleep state 5; the system sets the PCI power state of capable devices to D3 and turns off the power supplies that are not essential to wake up the CPUs. When the temperature falls below the recovery temperature, the sensor that reported the over-temperature value generates an SMB_ALERT.

Recovery Temperature—This is the value at which a sensor generates an SMB_ALERT to wake up the CPU and cause the blade to reboot.

Power Cooling Module x

The **Power Cooling Module x** section of the Router iSR6200 page provides the following information about each router blade:

- **Status** shows whether the PCM is installed.
- **Power Supply** indicates whether the power supply is Connected or Unplugged.
- **Fan1** reports the condition of the first fan in the PCM: Healthy or Faulty.
- **Fan2** reports the condition of the second fan in the PCM: Healthy or Faulty.
- **Fan3** reports the condition of the third fan in the PCM: Healthy or Faulty.

License Info

The License Info page for the Router iSR6200 chassis provides the following licensed feature information (Figure 3-2 shows an example).

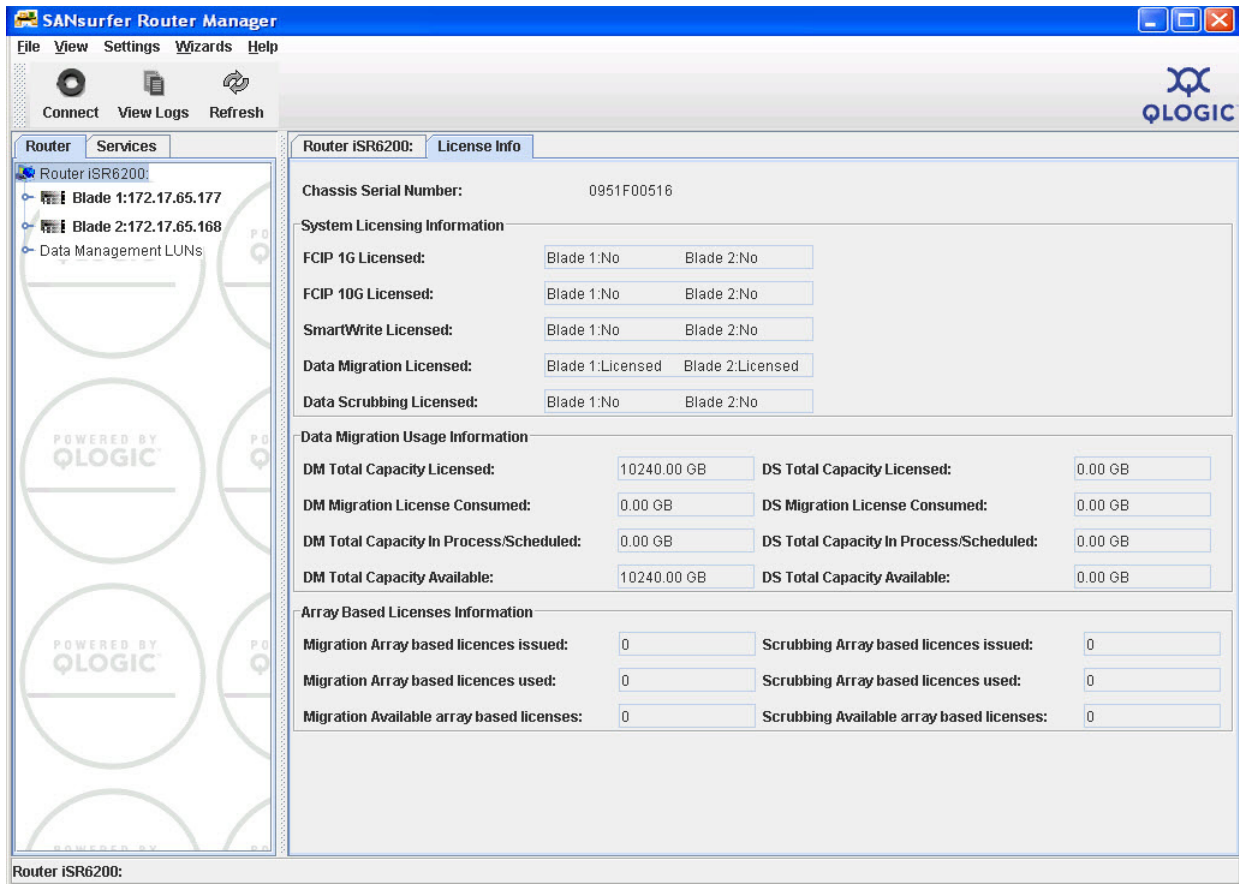


Figure 3-2. Router Chassis: License Info Page

- **Chassis Serial Number**
- **System Licensing Information:** For each blade, shows whether the following are **Licensed** or **No** (unlicensed).
 - ☐ FCIP 1G Licensed
 - ☐ FCIP 10G Licensed
 - ☐ SmartWrite™ Licensed
 - ☐ Data Migration Licensed
 - ☐ Data Scrubbing Licensed

- **Data Migration Usage Information:** For the router, shows the amounts, in GB, for data migration (“DM”) and data scrubbing (“DS”), including:
 - ☐ **DM Total Capacity Licensed**
 - ☐ **DS Total Capacity Licensed**
 - ☐ **DM Migration License Consumed**
 - ☐ **DS Migration License Consumed**
 - ☐ **DM Total Capacity In Process/Scheduled**
 - ☐ **DS Total Capacity In Process/Scheduled**
 - ☐ **DM Total Capacity Available**
 - ☐ **DS Total Capacity Available**
- **Array Based Licenses Information:** For array-based data migration licenses, shows the following quantities:
 - ☐ **Migration Array based licenses issued**
 - ☐ **Scrubbing Array based licenses issued**
 - ☐ **Migration Array based licenses used**
 - ☐ **Scrubbing Array based licenses used**
 - ☐ **Migration Available array based licenses**
 - ☐ **Scrubbing Available array based licenses**

NOTE

For more information, see the *Data Migration Solution for iSR6200 User’s Guide*, “Data Migration Licenses” chapter.

Router Blades

When you click the **Blade** node on the router tree, the following tabbed pages are shown:

- [“Information” on page 3-7](#)
- [“SNMP Management” on page 3-17](#)
- [“Features” on page 3-19](#)
- [“Telnet” on page 3-20](#)

Information

The Information page for a blade contains vertical tabs with icons that identify its content: **Basic Information**, **Management Information**, **NTP Server Information**, and **Security**. It also contains buttons that function as follows:

- Click **Reboot** to reboot the router blade.
- Click **FW Load** to open the Firmware Load dialog box and update the router firmware. (For more information, see [“Updating the Firmware” on page 1-4.](#))
- Click **Restore Defaults** to revert to the factory-set router options.
- Click **Reset Mappings** to remove all mappings between initiators and LUNs, as well as between manually created targets.

Basic Information

The first vertical tab on the Information page (Figure 3-3) shows the router blade's basic information.

The screenshot shows a web interface for configuring a router blade. At the top, there are four tabs: 'Information', 'SNMP Management', 'Features', and 'Telnet'. The 'Information' tab is selected. On the left side of the 'Information' tab, there is a vertical menu with three icons: a sigma symbol (selected), a gear, and a lock. The main content area is titled 'Basic Information' and contains the following fields and settings:

Product Name:	iSR6200
Symbolic Name:	Blade-1
Serial Number:	3U7949L001
Boot Loader Version	0.97.0.4
Hardware Version:	31892-03 C (IPv6 Supported)
Software Version:	3.4.0.0rc2
iSCSI Port Count:	4
Fibre Channel Port Count:	4
Temperature (Front/Rear/CPU1/CPU2)	49.0°C/39.0°C/45.0°C/45.0°C
System Uptime	10 Days 16 Hrs 54 Mins 22 Secs

Below these fields are two sections of settings:

System Settings		Target - LUN Settings	
System Log Level	0	Target Access Control	Enabled
SSH Enabled	Enabled	Target Presentation Mode	Auto
Telnet Enabled	Enabled	LUN Mapping	Enabled
FTP Enabled	Enabled	Controller LUN AutoMap	Disabled
		Time To Target Device Offline	0

At the bottom of the main content area is a 'Save' button. Below the main content area are four buttons: 'Reboot', 'FW Load', 'Restore Defaults', and 'Reset Mappings'.

Figure 3-3. Blade Information: Basic Information Page

The Basic Information page provides the following:

- **Product Name** identifies the router model.
- **Symbolic Name** provides a box for you to assign a symbolic name to the router blade.
- **Serial Number** indicates the router blade's serial number.
- **Boot Loader Version** identifies the version of the installed boot loader installed.

- **Hardware Version** identifies the router blade hardware version number. Starting with version 6, the hardware supports IPv6.
- **Software Version** identifies the version of firmware loaded on the router blade. IPv6 requires software version 2.4.0.0 or later.
- **iSCSI Port Count** specifies the number of iSCSI ports (**4**) on the selected router blade.
- **Fibre Channel Port Count** specifies the number of Fibre Channel ports (**2**) on the selected router blade.
- **Temperature (Front/Rear/CPU1/CPU2)** shows the current temperatures in degrees Centigrade for the router blade.
- **System Uptime** indicates the number of days, hours, minutes, and seconds that the system has been up since booting after the last shutdown or reboot.
- **System Settings** provides the following options:
 - ☐ **System Log Level:** Select **0**, **1**, or **2** to specify the level of logging, where levels 1 and 2 will impact performance.
 - ☐ **SSH Enabled:** Select **Enabled** or **Disabled** to allow or deny access to the router through SecureShell (SSH).
 - ☐ **Telnet Enabled:** Select **Enabled** or **Disabled** to allow or deny access to the router through Telnet.
 - ☐ **FTP Enabled:** Select **Enabled** or **Disabled** to allow or deny access to the router through FTP.
- **Target - LUN Settings** provides the following options:
 - ☐ **Target Access Control:** Select **Disabled** (the default setting) to present all targets to all initiators. Or, select **Enabled** to obtain more control over which iSCSI targets are presented to which initiators. Target access control allows you to restrict access to iSCSI targets from initiators, per router blade. When enabled, the targets are presented to an initiator only if one or more LUNs are presented to that initiator from that target. Note that if the **Controller LUN AutoMap** option is enabled (the default setting), the **Target Access Control** has no effect on targets that have controller LUNs. Therefore, on storage arrays that have a controller LUN, you must disable the **Controller LUN AutoMap** option and enable the **Target Access Control** to obtain the needed access control. In addition, when **Target Access Control** is enabled, the target is presented to an initiator if one or more LUNs are mapped to that initiator from any VP group. That is, the host “sees” all VP groups, even if the LUNs are presented only from one of the VP groups from that target.

- ☐ **Target Presentation Mode:** Use this setting to specify whether the Fibre Channel targets are automatically or manually presented into iSCSI SAN. Select **Auto** (the default and recommended setting) to have the Fibre Channel target are automatically presented into iSCSI SAN. Or, select **Manual** to manually present the Fibre Channel targets into the iSCSI SAN using the `targetmap add` command in the CLI or the Target Map Wizard in the GUI.
- ☐ **LUN Mapping:** Select **Enabled** or **Disabled** to allow or disallow access to a LUN.
- ☐ **Controller LUN AutoMap:** Select **Enabled** (the default setting) to obtain user-level control for mapping the storage array controller (SCSI Device Type 0x0C). When enabled, the controller LUN is automatically mapped to all hosts. Or, select **Disabled** to instead manually map the controller LUN to hosts.
- ☐ **Time to Target Device Offline:** This setting defines the time for which the iSCSI target device remains presented into the Fibre Channel SAN after the iSCSI target device has disappeared or logged out on the iSCSI side. Use this setting to handle conditions where the iSCSI target device logs out temporarily and then logs back in.
 - Specify a value of **0** to have the presentation immediately removed.
 - Specify a value of **30** to have the presentation of the Fibre Channel device remain intact for 30 seconds after the iSCSI target device has logged out.

QLogic recommends a time to target device offline of 30 seconds to ensure that if the iSCSI target device temporarily logs out (disappears) and then logs back in within 30 seconds, the I/Os can resume without causing any disruption in the Fibre Channel SAN.

NOTE

Use the **Time to Target Device Offline** parameter in a configuration where iSCSI target devices are mapped into the Fibre Channel SAN using the iSR6200. This parameter applies only to iSCSI target devices.

If you make any changes on this page, the **Save** button becomes enabled. Click it to preserve your modifications.

Management Information

Click the second vertical tab on the router blade's Information page to view the Management Information page, as shown in [Figure 3-4](#).

The screenshot shows a web-based configuration interface for a router blade. The top navigation bar includes tabs for 'Information', 'SNMP Management', 'Features', and 'Telnet'. The 'Information' tab is selected. On the left side, there is a vertical toolbar with three icons: a sigma symbol (Σ), a gear with a star, and a padlock. The main content area is titled 'Management Information'. It displays the 'MAC Address' as '00-C0-DD-13-B1-35' and the 'Link Status' as 'Link Up' with a green dot icon. Below this, there are two sections: 'IPv4 Management Info' and 'IPv6 Management Info'. The 'IPv4 Management Info' section has a checked checkbox and two radio button options: 'Obtain an IP address automatically (DHCP)' and 'Use the following IP address:'. The 'Use the following IP address' option is selected, and it includes input fields for 'IP Address' (172.17.64.82), 'Subnet Mask' (255.255.254.0), and 'Gateway' (172.17.64.1). The 'IPv6 Management Info' section also has a checked checkbox and two radio button options: 'Auto' and 'Manual'. The 'Auto' option is selected. Below these are input fields for 'IPv6 Address 1', 'IPv6 Address 2', 'IPv6 Default Router', and 'IPv6 Link Local', each with a double colon (..) placeholder. At the bottom of the main content area is a 'Set IP Address' button. At the very bottom of the window are four buttons: 'Reboot', 'FW Load', 'Restore Defaults', and 'Reset Mappings'.

Figure 3-4. Blade Information: Management Information Page

The Management Information page for a blade provides the following:

- **MAC Address** specifies the management port's MAC address.
- **Link Status** shows the management port link status as **Link Up** or **Link Down**.

- **IPv4 Management Info:** Select this check box to use IPv4 (Internet Protocol version 4, 32-bit addressing), and then click the appropriate button to identify whether to use either a dynamic or static IP address:
 - ☐ Click **Obtain an IP address automatically (DHCP)** to have the system automatically obtain the IP address, subnet mask, and gateway through DHCP.
 - ☐ Click **Use the following IP address** to manually specify the following:
 - **IP Address** indicates the management port's IP address.
 - **Subnet Mask** indicates the management port's subnet mask.
 - **Gateway** indicates the IP address of the server acting as a gateway to your Internet connection.
- **IPv6 Management Info:** Select this check box to use IPv6 (Internet Protocol version 6, 128-bit addressing), and then click the appropriate button to identify whether to use either a dynamic or static IP address:
 - ☐ Click **Auto** to automatically obtain the IPv6 information.
 - ☐ Click **Manual** to manually enter the following IPv6 information:
 - **IPv6 Address1** indicates the first user-assigned IPv6 address to which the port responds. A value of :: indicates that an IPv6 address has not been assigned.
 - **IPv6 Address2** indicates the second user-assigned IPv6 address to which the port responds. A value of :: indicates that an IPv6 address has not been assigned.
 - **IPv6 Default Router** indicates the address of the default router for the IPv6 protocol. The system can also dynamically set the IPv6 default router depending on your network configuration.
 - **IPv6 Local Link** indicates the IPv6 link local address of the port. It is not editable.

NOTE

IPv6 support is available only with hardware version 6 and later and software version 2.4.0.0 and later.

- **Set IP Address.** After making any IP address changes, click this button to save your changes.

NTP Server Information

Select the third vertical tab on the router blade's Information page to view the NTP Server Information page (Figure 3-5).

Information SNMP Management Features Telnet

NTP Server Information

System Time: May 7 2012 14:02:10

☒ Disable NTP Servers

☐ Enable NTP Servers

NTP Server 1:

☒ IPv4 Server

☐ IPv6 Server

NTP Server 2:

☒ IPv4 Server

☐ IPv6 Server

NTP Server 3:

☒ IPv4 Server

☐ IPv6 Server

Set NTP Address

☒ Enable iSNS

IPv4 Server Server IP address:

Save

Reboot FW Load Restore Defaults Reset Mappings

Figure 3-5. Blade Information: NTP Server Information Page

The NTP Server Information page for the blade provides the following options:

- Click **Disable NTP Servers** to prevent NTP servers from setting the router blade's date and time.
- Click **Enable NTP Servers** to allow NTP servers to set the router blade's date and time, and then specify the IP addresses of up to three NTP servers as follows:
 - ☐ **NTP Server 1** specifies the IP address of the first NTP server to be queried by the router blade when setting its time and date. If your hardware supports IPv6, you may select the protocol of the NTP server, either IPv4 or IPv6, and then enter the IP address using the appropriate notation.
 - ☐ **NTP Server 2** specifies the IP address of the second NTP server to be queried by the router blade when setting its time and date. This server is used only if the first NTP server does not respond. If your hardware supports IPv6, you may select the IP protocol of the NTP server, either IPv4 or IPv6, and then enter the IP address using the appropriate notation.
 - ☐ **NTP Server 3** specifies the IP address of the third NTP server to be queried by the router blade when setting its time and date. This server is used only if the first and second NTP servers do not respond. You may select the IP protocol of the NTP server, either IPv4 or IPv6, and then enter the IP address using the appropriate notation.
- **Set NTP Address.** After enabling NTP Servers and setting their IP addresses, click this button to save your changes.
- **Enable iSNS.** Select this check box to allow input of iSNS server details. Then complete the following steps:
 - a. Select an IP server type: **IPv4 Server** or **IPv6 Server**.
 - b. Type the **Server IP address**.
 - c. Click **Save** to preserve the iSNS changes.

Security Information

Select the fourth vertical tab on the router blade's Information page to view the Security Information page (Figure 3-6) and change passwords, as needed.

Figure 3-6. Blade Information: Security Information

The Security Information page enables you to set the router's application and data migration access passwords. This page provides the following sections:

- **Application Access** options:

- ☐ **Current Password.** Type the current password.

NOTE

The default password is `config`.

- ☐ **New Password:** Type the new password.
- ☐ **Verify New Password:** Retype the new password.

- **Data Migration Access** options:

- ☐ **Current Password.** Type the current password.

NOTE

The default password is `migration`.

- ☐ **New Password:** Type the new password.
- ☐ **Verify New Password:** Retype the new password.
- **Apply:** Click this button to save the password changes.
- **Clear Fields:** Click this button to clear the **Current Password**, **New Password**, and **Verify New Password** boxes.

SNMP Management

The iSR6200 router has an SNMP agent that sends router status information to the SNMP management application. The SNMP Management page (Figure 3-7) includes two sections: **SNMP Configuration** and **Enabled SNMP Trap Receivers**. Click the **Save** button to save SNMP management changes. For more information, see [Appendix A Simple Network Management Protocol](#).

SNMP Configuration			
Vendor			
System OID	1.3.6.1.4.1.3873.1.17		
System Description	QLogic iSR6200		
SNMP Settings			
Read Community:		
Trap Community:		
System Location:	Irvine CA		
System Contact:	Jonathan Tyler		
Authentication traps:	Disabled		
<input checked="" type="checkbox"/> Enabled SNMP Trap Receivers			
IPv4 Address	IP Address:	172 . 06 . 14 . 93	Trap Port: 162 Trap Version: 1
IPv4 Address	IP Address:	172 . 03 . 17 . 00	Trap Port: 162 Trap Version: 2
IPv4 Address	IP Address:	0 . 0 . 0 . 0	Trap Port: 0 Trap Version: 0
IPv4 Address	IP Address:	0 . 0 . 0 . 0	Trap Port: 0 Trap Version: 0
IPv4 Address	IP Address:	0 . 0 . 0 . 0	Trap Port: 0 Trap Version: 0
IPv4 Address	IP Address:	0 . 0 . 0 . 0	Trap Port: 0 Trap Version: 0
IPv4 Address	IP Address:	0 . 0 . 0 . 0	Trap Port: 0 Trap Version: 0
IPv4 Address	IP Address:	0 . 0 . 0 . 0	Trap Port: 0 Trap Version: 0
Save			

Figure 3-7. Blade: SNMP Management Page

SNMP Configuration

The SNMP Configuration options include the following:

- **System OID** indicates the vendor's system object identifier.
- **System Description** shows the product description of the router (QLogic iSR6200).
- **SNMP Settings** include the following:
 - ☐ **Read Community:** Type a password that authorizes an SNMP management server to read information from the router. This is a write-only box. The value on the router and the SNMP management server must be the same. The read community password can be up to 32 characters excluding the number sign (#), semicolon (;), and comma (,). The default is *public*.
 - ☐ **Trap Community:** Type a password that authorizes an SNMP management server to receive traps. This is a write-only box. The value on the router and the SNMP management server must be the same. The trap community password can be up to 32 characters excluding the number sign (#), semicolon (;), and comma (,). The default is *private*.
 - ☐ **System Location** specifies the name of the router location. The name can be up to 64 characters excluding the number sign (#), semicolon (;), and comma (,).
 - ☐ **System Contact** specifies the name of the person to be contacted to respond to trap events. The name can be up to 64 characters excluding the number sign (#), semicolon (;), and comma (,).
 - ☐ **Authentication Traps** enables or disables the generation of traps in response to authentication failures.

Enabled SNMP Trap Receivers

Select the **Enabled SNMP Trap Receivers** check box to enable the trap receiver boxes and specify each IP address, trap port, and trap version. The router can support up to eight trap addresses. For each entry, specify the following:

- **IP Protocol:** Select the IP protocol version from the list, either **IPv6 Address** or **IPv4 Address**. The corresponding **IP Address** box changes to accept the appropriate format.
- **IP Address** specifies the IP address to which the SNMP traps are sent.
- **Trap Port** identifies the port number on which the trap is sent. The default is 162.
- **Trap Version** specifies the SNMP version (1 or 2) with which to format traps.

Features

The Features page shows the router's licensed features and lets you apply additional license features. [Figure 3-8](#) shows an example.

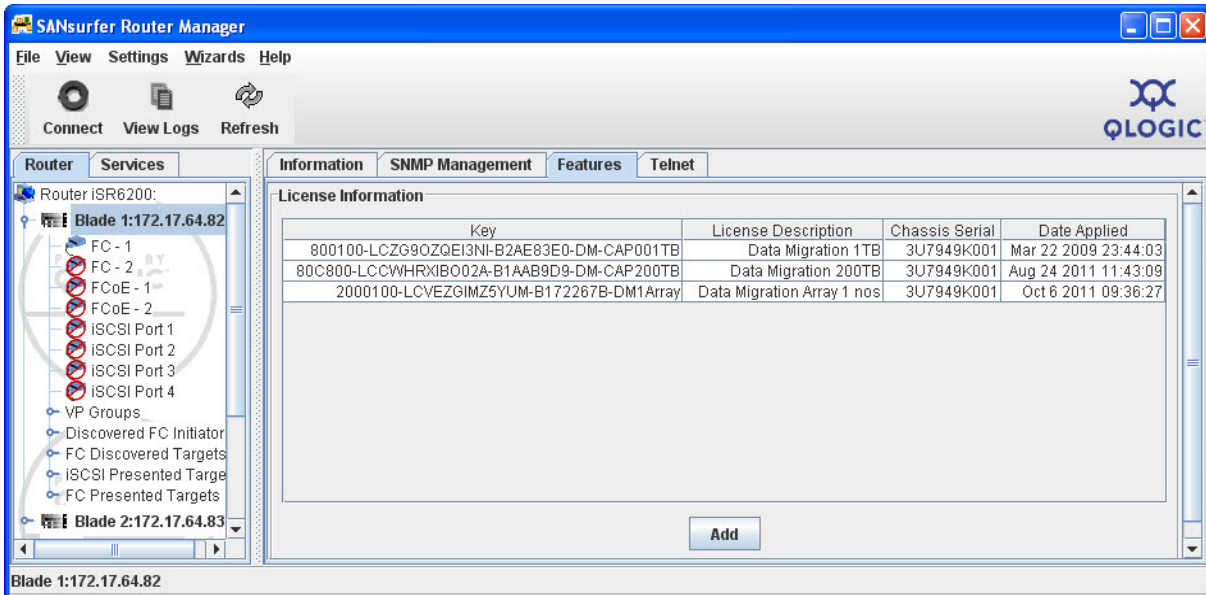


Figure 3-8. Blade: Features Page

The Features page provides the following options:

- **License Information** lists the router's licensed features, including the license key, license description, chassis serial number, and the date the license was applied.
- **Add** opens the Add License Key dialog box, where you can enter the license key that enables a feature on the selected router blade. (For details, see "Adding a License Key" in the help system.)

Telnet

The Telnet page contains a Telnet session window to the connected router blade. Use Telnet on the LAN connection to access a command line interface (CLI) on a remote machine. [Figure 3-9](#) shows an example.

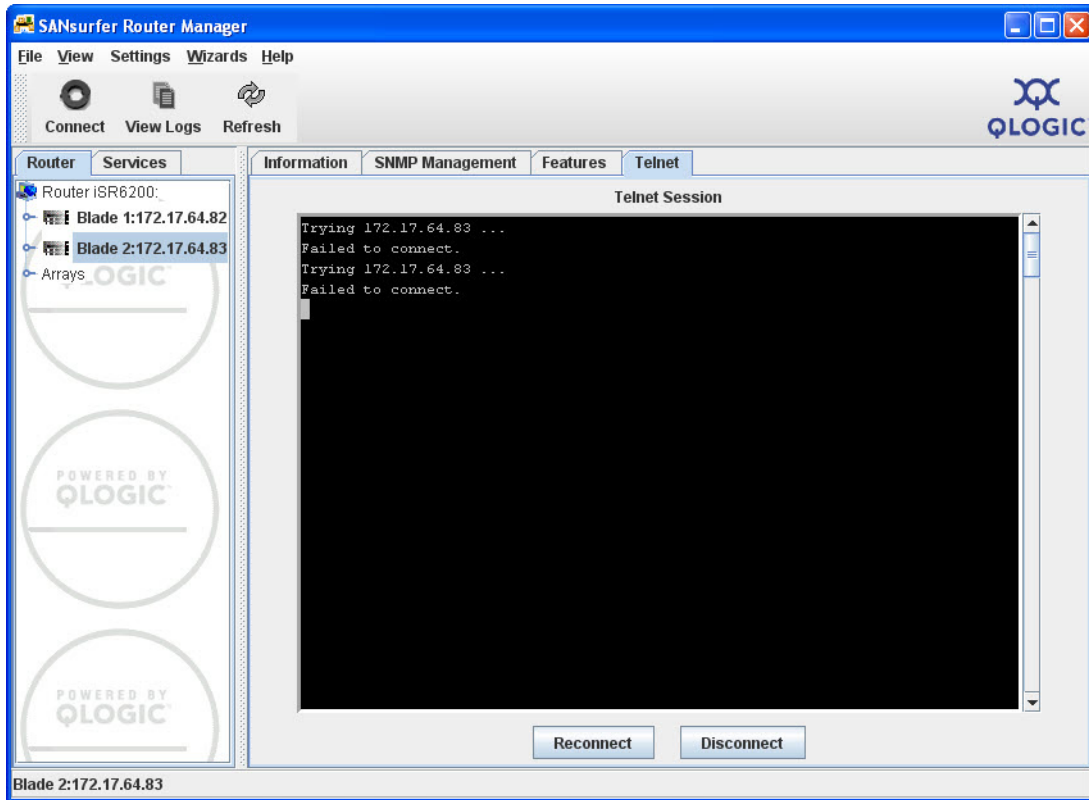


Figure 3-9. Blade: Telnet Page

The Telnet page provides the following options:

- Click **Reconnect** to reopen a disconnected Telnet session.
- Click **Disconnect** to close the current Telnet session.

Remote Peers

Use remote peers to create a connection between a local and a remote router using the iSR6200's iSCSI port. This feature uses the native IP method for accessing remote iSR6200 information on the local iSR6200. Use a remote peer when the destination array is located at a different geographic location from the source array.

Selecting the Remote Peers branch on the router tree does not provide any information in the right pane. Expand the **Remote Peers** node, and then select a remote peer icon to view the IP address page in the right pane. Figure 3-10 shows an example.

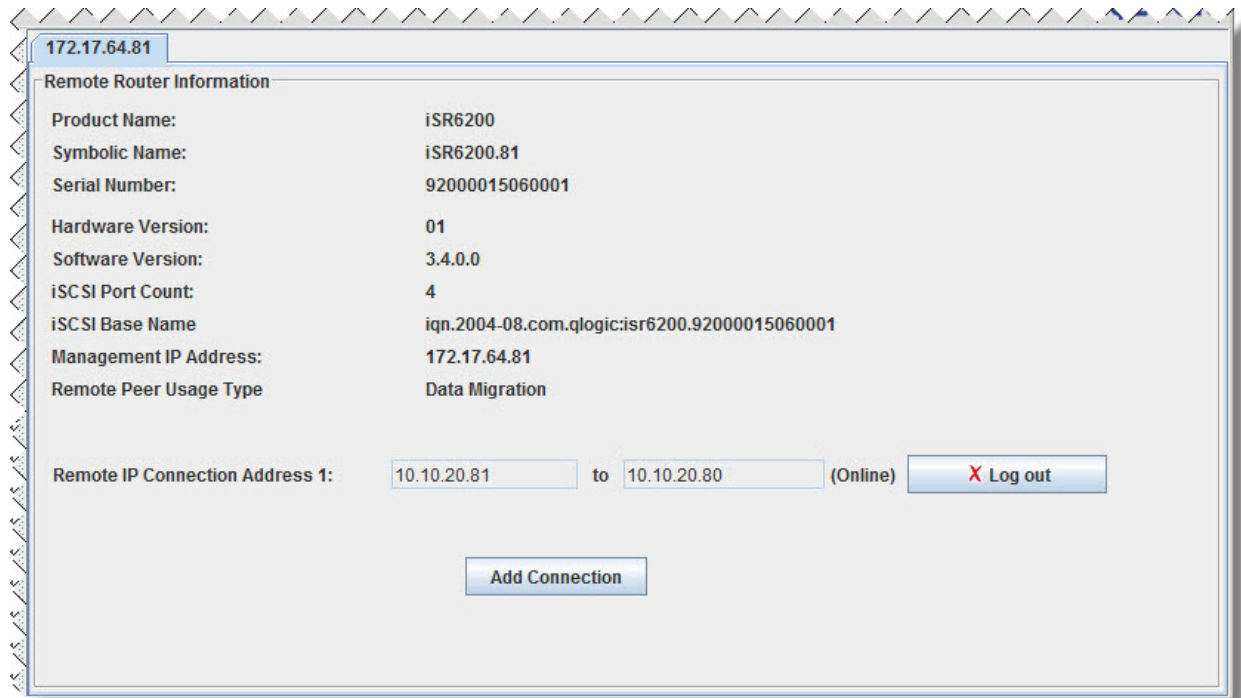


Figure 3-10. Remote Peer: [IP Address] Page

The IP address page for the selected remote peer contains the following under **Remote Router Information**:

- **Product Name** identifies the remote peer router model number.
- **Symbolic Name** identifies the blade symbolic name on the remote peer.
- **Serial Number** shows the remote peer's serial number.
- **Hardware Version** shows the remote peer's router hardware version.
- **Software Version** shows the firmware version installed on the remote peer.
- **iSCSI Port Count** indicates the quantity of iSCSI ports on the remote peer.
- **iSCSI Base Name** indicates the IQN name of the remote iSCSI port used in the remote peer connection.
- **Management IP Address** shows the IP address of the remote peer's management port.

- **Remote Peer Usage Type** indicates the peer router's license usage type that was selected on the Add Remote Peer Wizard. The usage type is one of the following:
 - ☐ **Data Migration** indicates that the peer is licensed to migrate data between local and remote LUNs.
 - ☐ **Remote Maps** indicates that the peer is licensed to connect two individual SANs.
- **Remote IP Connection Address x** specifies the IP address of the local and remote iSCSI ports used for the remote peer connection. If multiple connections exist between the blades, they are listed in order.
- Click **Logout** to remove the remote peer connection.
- Click **Add Connection** to create a second connection between the peer routers. A maximum of two connections can be established between the peer routers.

FC Ports

When you click a Fibre Channel port in the router tree, information for that port appears in the right pane.

The FC port view includes the following pages:

- [“Information” on page 3-28](#)
- [“Advanced Configuration” on page 3-24](#)
- [“Statistics” on page 3-25](#)
- [“Performance” on page 3-27](#)

Information

The Information page for the selected Fibre Channel port contains details about the port, as shown in [Figure 3-11](#).

The screenshot shows a web interface for configuring a Fibre Channel port. It has four tabs: Information, Advanced Configuration, Statistics, and Performance. The Information tab is active, displaying the following details:

- Node Name:** 20-00-00-C0-DD-1F-22-3D
- Port Name:** 21-00-00-C0-DD-1F-22-3D
- Port Status:** Disabled (with a dropdown arrow)
- Link Status:** Link Up
- Port ID:** 01-01-00
- Actual Connection Mode:** Point to Point
- Actual Data Rate:** 8 Gbps

Below these details is a section titled "VP Groups" containing a table with 6 columns: VPG Index, VPG Name, Enabled, WWPN, WWNN, and PortID.

VPG Index	VPG Name	Enabled	WWPN	WWNN	PortID
1	VPGROUP_1	Enabled	21-00-00-C0-DD-1F-22-3D	20-00-00-C0-DD-1F-22-3D	01-01-00
2	VPGROUP_2	Disabled	21-01-00-C0-DD-1F-22-3D	20-01-00-C0-DD-1F-22-3D	00-00-00
3	VPGROUP_3	Disabled	21-02-00-C0-DD-1F-22-3D	20-02-00-C0-DD-1F-22-3D	00-00-00
4	VPGROUP_4	Disabled	21-03-00-C0-DD-1F-22-3D	20-03-00-C0-DD-1F-22-3D	00-00-00

At the bottom of the form is a "Save" button.

Figure 3-11. FC Port: Information Page

The Fibre Channel port Information page includes the following **Port Information** details:

- **Node Name** is the world wide node name (WWNN) assigned to the FC port.
- **Port Name** is the world wide port name (WWPN) assigned to the FC port.
- **Port Status** lets you set the port status to **Enabled** or **Disabled**.
- **Link Status** indicates the port status as either **Link Up** or **Link Down**.
- **Port ID** indicates the ID assigned by the Fibre Channel fabric or AL_PA when connected on a private loop.
- **Actual Connection Mode** specifies the port's connection mode, **Point-to-Point** or **Loop**.
- **Actual Data Rate** specifies the rate at which the port operates when on-line, either **2 Gbps**, **4 Gbps**, or **8 Gbps** (gigabits per second).

- **VP Groups** lists the virtual port groups (VPGs) associated with the selected router blade. For each group, the table identifies the **VPG Index**, **VPG Name**, **Enabled** status, **WWPN**, **WWNN**, and **Port ID** for each VPG.

If you change the **Port Status**, click **Save** to save your changes. A warning message prompts you to verify the status change. Click **Yes** to proceed, or click **No** to cancel the status change.

Advanced Configuration

The Fibre Channel port view provides an Advanced Configuration page with editable configuration parameters for the selected port, as shown in [Figure 3-12](#).

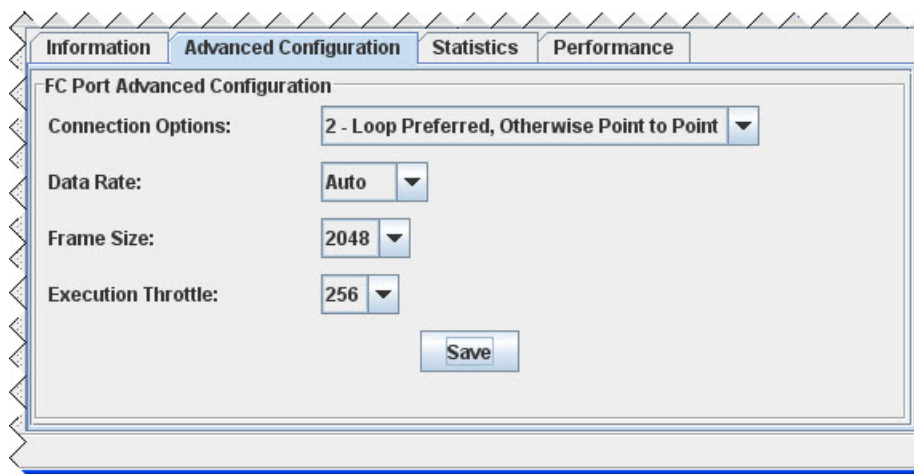


Figure 3-12. FC Port: Advanced Configuration Page

To update the advanced port configuration:

1. For each parameter you want to change, select the appropriate value from the list:
 - ❑ **Connection Options:** 0 - Loop Only, 1 - Point to Point Only, or 2 - Loop Preferred, Otherwise Point to Point.
 - ❑ **Data Rate:** Auto, 2Gbps, 4Gbps, or 8Gbps.
 - ❑ **Frame Size:** 512, 1024, or 2048.
 - ❑ **Execution Throttle:** 16, 32, 64, 128, or 256.

NOTE

You can set the execution throttle to other values (16–65535) using the command line interface (CLI). For details, see the *iSR6200 Command Line Interface (CLI) User's Guide*.

2. Click **Save**.

The following warning message appears:

Changing the following port settings might cause a loss of connection to one or more ports.

Do you want to proceed with the save operation?

3. Click **Yes** to continue saving the changes, or **No** to cancel the changes.

If you click **Yes**, the Security Check dialog box prompts you to enter the system password.

4. Type the system password, and then click **OK**.

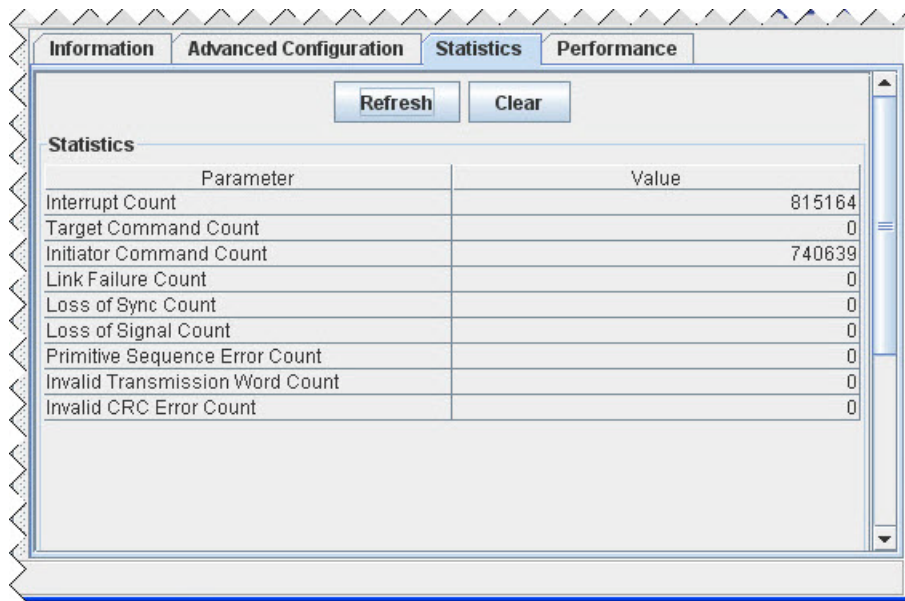
The FC Port Settings window shows the following message:

Save FC Port Settings Complete.

5. To close the message box, click **OK**.

Statistics

The Statistics page for the selected Fibre Channel port contains a table of parameters and values, as shown in [Figure 3-13](#).



The screenshot shows a web interface with four tabs: Information, Advanced Configuration, Statistics (selected), and Performance. Below the tabs are 'Refresh' and 'Clear' buttons. The Statistics tab contains a table with two columns: 'Parameter' and 'Value'.

Parameter	Value
Interrupt Count	815164
Target Command Count	0
Initiator Command Count	740639
Link Failure Count	0
Loss of Sync Count	0
Loss of Signal Count	0
Primitive Sequence Error Count	0
Invalid Transmission Word Count	0
Invalid CRC Error Count	0

Figure 3-13. FC Port: Statistics Page

- To refresh the statistics, click **Refresh**.
- To clear the statistics (set the values to zero), click **Clear**.

The FC port Statistics page reports the values for the following FC port parameters:

- Interrupt Count
- Target Command Count
- Initiator Command Count
- Link Failure Count
- Loss of Sync Count
- Loss of Signal Count
- Primitive Sequence Error Count
- Invalid Transmission Word Count
- Invalid CRC Error Count

NOTE

For more detailed Fibre Channel port statistics, issue the CLI command `show stats`.

Performance

The Performance page for the FC port contains a graph depicting read/write performance, as shown in [Figure 3-14](#).

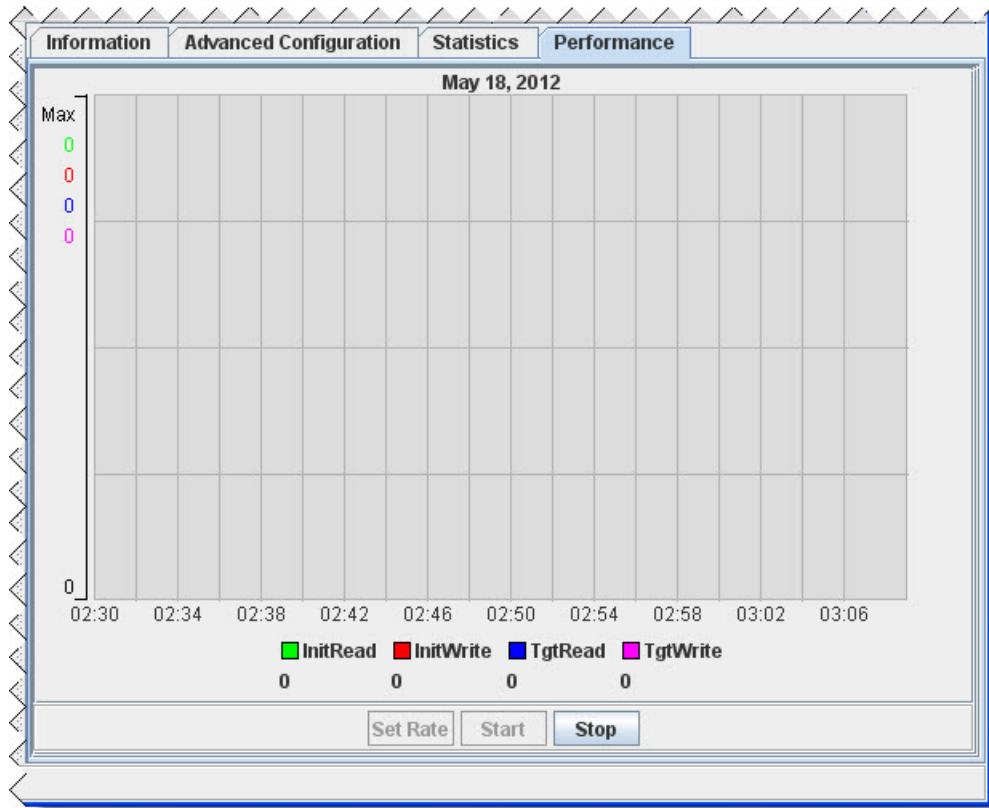


Figure 3-14. FC Port: Performance Page

To monitor Fibre Channel port performance:

1. On the FC Port Performance page, click **Set Rate**.
2. On the Performance Sampling Rate dialog box, type a **Sampling Rate** as an integer from 1 to 30, and then click **OK**.
3. Click **Start** to begin monitoring.
The performance graph reveals port I/O performance.
4. To end the performance graphing session, click **Stop**.

FCoE Ports

When you click an FCoE port in the router tree, information for that port appears in the right pane. The FCoE port view includes the following pages:

- Information
- Advanced Configuration
- Statistics
- Performance

For information about the FCoE port pages, see [“FC Ports” on page 3-22](#). The FCoE port pages contain the same content as the FC port pages.

iSCSI Ports

When you select an iSCSI port in the router tree, the following tabbed pages appear in the right pane:

- [“Information” on page 3-28](#)
- [“Advanced Configuration” on page 3-32](#)
- [“Statistics” on page 3-34](#)

Information

The Information page for iSCSI ports contains sections for **iSCSI Port Information** and **iSCSI Port Network Settings**, as shown in [Figure 3-15](#).

NOTE

To apply any changes made on this page, click the **Save** button, located at the bottom of window.

The screenshot shows a web-based configuration interface for iSCSI ports. The 'Information' tab is selected, displaying the following details:

- iSCSI Port Information:**
 - Base Name: iqn.2004-08.com.qlogic:isr6200.0951f00610.b1
 - Link Status: ● Link Up
 - Actual Port Speed: 1 Gbps/FDX
 - Link Rate Mode: Auto (dropdown)
 - MAC Address: 00-C0-DD-19-3C-2E
 - Programmed Port Speed: 100 Mbps (dropdown)
 - Flow Control: Enabled (dropdown)
- iSCSI Port Network Settings:**
 - Port Status: Enabled (dropdown)
 - IPv4 Address:**
 - IP Address: 192.168.1.102
 - Subnet Mask: 255.255.254.0
 - Gateway: 192.168.1.1
 - VLAN: Disabled (dropdown)
 - VLAN ID: 0
 - Priority: 0 (dropdown)
 - IPv6 Address:**
 - IPv6 Address 1: 2001:9012:0:0:0:0:0:102
 - IPv6 Address 2: ::
 - IPv6 Default Router: 2001:9012:0:0:0:0:0:1
 - IPv6 Link Local: FE80:0:0:0:2C0:DDFF:FE19:3C2E
 - VLAN IPv6: Disabled (dropdown)
 - VLAN ID IPv6: 0
 - Priority IPv6: 0 (dropdown)

A 'Save' button is located at the bottom of the configuration area.

Figure 3-15. iSCSI Port: Information Page

iSCSI Port Information

The **iSCSI Port Information** area provides the following parameters:

- **Base Name** is the full name assigned to the selected iSCSI port. For example:

iqn.2004-08.com.qlogic:isr6200.0834e0019.b1

where:

iqn.2004-08.com.qlogic = Vendor name and registration date
isr6200 = Product name
0834e0019 = iSR6200 chassis serial number
b1 = Blade (b1 or b2)

Base Name Examples:

Before enabling the *embedded symbolic name* option:

```
iqn.2004-08.com.qlogic:isr6200.0823e00014.b1.02.50001fe150069d2d
```

After enabling *embed symbolic name* option (with the symbolic name set to *oxygen*):

```
iqn.2004-08.com.qlogic:isr6200.0823e00014.b1:oxygen.02.50001fe150069d29
```

- **Link Status** identifies the port connection status: **Link Up** or **Link Down**.
- **MAC Address** assigned to the port; this parameter cannot be changed.
- **Actual Port Speed** indicates the real speed, for example, 1Gbps/FDX. If the port's configuration or connection has changed, the value may not be current. Click the **Refresh** button to view the current speed.
- **Programmed Port Speed** indicates the configured data rate for the port. To change the data rate, select one of the following data rates:
 - ☐ **Auto** is the data rate determined by network attachment.
 - ☐ **100 Mbps** specifies 100 megabits per second.
 - ☐ **1 Gbps** specifies 1 gigabit per second.
 - ☐ **10 Gbps** specifies 10 gigabits per second.
- **Link Rate Mode** is available If you selected a specific **Programmed Port Speed** (not **Auto**). Select either **Auto**, **Half Duplex**, or **Full Duplex** mode.
- **Flow Control**. If you selected a specific **Programmed Port Speed** (not **Auto**), you can enable or disable flow control.

iSCSI Port Network Settings

The **iSCSI Port Network Settings** area provides the following parameters:

- **Port Status** allows you to enable or disable the port when the port link is up.
- **IPv4 Address**. When using an IPv4 address, define the following parameters:
 - ☐ **IP Address** is the IP address to which the port responds. An un-initialized port has an IP address of all zeros.
 - ☐ **Subnet Mask** is the subnet mask used by the port.
 - ☐ **Gateway** is the gateway for the selected port.

- ☐ **VLAN** indicates the virtual LAN configuration: **Disabled** or **Enabled**. Enable VLAN to configure the following:
 - **VLAN ID** specifies an identification value in the range **1** to **4094**.
 - **Priority** defines the priority (**0** to **7**) assigned to this VLAN.
- **IPv6 Address**. When using an IPv6 address, define the following parameters:
 - ☐ **IPv6 Address1** is the first user-assigned IPv6 address to which the port responds. A value of :: indicates that an IPv6 address has not been assigned.
 - ☐ **IPv6 Address2** is the second user-assigned IPv6 address to which the port responds. A value of :: indicates that an IPv6 address has not been assigned.
 - ☐ **IPv6 Default Router** sets the default router for the IPv6. The system can also dynamically set the IPv6 default router, depending on your network configuration.
 - ☐ **IPv6 Link Local** specifies the IPv6 link local address of the port. It cannot be changed.
 - ☐ **VLAN IPv6** indicates the VLAN IPv6 configuration as **Disabled** or **Enabled**. When enabled, you can configure the following:
 - **VLAN ID IPv6** contains an identification value in the range **1** to **4094**.
 - **Priority IPv6** defines the priority assigned to this VLAN IPv6. To set the priority, select a value (between **0** and **7**).

NOTE

IPv6 support is available only with hardware version 6 and software version 2.4.0.0 and greater.

Advanced Configuration

Use the Advanced Configuration page for iSCSI ports to configure the router blade's port parameters, security settings, and CHAP settings, as shown in [Figure 3-16](#).

The screenshot shows the 'Advanced Configuration' tab for an iSCSI port. The 'iSCSI Port Parameters' section contains the following settings:

Parameter	Value
iSCSI Port Number	1
Target TCP Port Number	3260
IPv6 Target TCP Port Number	3260
TCP Max Window Size	8388608
Jumbo Frame	Jumbo
Max Burst Length	262144
Max First Burst Length	65536
Bandwidth (MB/sec)	125

The 'Security Settings' section includes two unchecked checkboxes: 'Enable Header Digest' and 'Enable Data Digest'.

The 'CHAP Settings' section includes a checked checkbox 'Enable CHAP' and a 'CHAP Secret' field with masked characters (dots).

A 'Save' button is located at the bottom of the configuration area.

Figure 3-16. iSCSI Port: Advanced Configuration Page

Advanced iSCSI Port Parameters

The **Advanced iSCSI Port Parameters** section provides the following identifying information:

- **iSCSI Port Number** identifies the iSCSI port (**1, 2, 3, or 4**).
- **Target TCP Port Number** identifies the TCP port number that the iSR6200 router blade uses to receive iSCSI target commands. The iSCSI community uses TCP port number 3260 by default. Any change to this TCP port number requires a corresponding change in all iSCSI initiators connecting to this iSCSI target port.
- **IPv6 Target TCP Port Number** identifies the TCP port number the iSR6200 uses to receive iSCSI target commands. The iSCSI community uses TCP port number 3260 by default; any change to this TCP port number requires a corresponding change in all iSCSI initiators connecting to this iSCSI target port.
- **TCP Max Window Size** allows you to select the TCP maximum window size from a list of values ranging from **8192** to **1048576**.
- **Jumbo Frame** enables or disables iSR6200 router blade jumbo frame size as the maximum transmission unit (MTU). Disabling this option sets the port to support **1500 byte MTU**. Enabling this option sets the port to support **9000 bytes MTU**.

NOTE

Make sure the iSR6200 configured MTU size is not greater than the Ethernet switch configured MTU size. Failure to do so can lead to lost host connectivity. For example, you can use an MTU size greater than 1500 only when the router blade is connected to a 1000Mbps Ethernet network.

- **Max Burst Length** specifies the iSCSI maximum burst length, which ranges from **512** to **262144** bytes, depending on iSCSI port configuration. (This parameter is not editable.)
- **Max First Burst Length** specifies the iSCSI maximum first burst length, which ranges from **512** to **262144** bytes, depending on the iSCSI port configuration. (This parameter is not editable.)
- **Bandwidth (MB/sec)** specifies the bandwidth to throttle the port in MBps.

Security Settings

This section provides the following parameters:

- **Enable Header Digest** enables or disables support for iSCSI header digest. Header digest is an iSCSI feature that adds a validity check field to iSCSI protocol data unit (PDU) headers to verify that no corruption has occurred during the transmission of the PDU header. The iSR6200 router blade supports header digest in hardware to maximize performance.

Select the check box to enable this option; clear the check box to disable it.

- **Enable Data Digest** enables or disables support for iSCSI data digest. Data digest is an iSCSI feature that adds a validity check field to iSCSI data to verify that no corruption has occurred during the transmission of the data. The iSR6200 router blade supports data digest in hardware to maximize performance.

Select the check box to enable this option; clear the check box to disable it.

NOTE

Enabling either the **Header Digest** or **Data Digest** slows performance, especially on 10Gb iSCSI ports.

CHAP Settings

The **CHAP Settings** section contains the following parameters:

- **Enable CHAP** enables or disables CHAP support. Select the check box to enable this option; clear the check box to disable it.
- **CHAP Secret** lets you define the CHAP secret used for authenticating an iSCSI client. The box is available only when the CHAP check box is selected.

NOTE

To apply changes made to this page, click the **Save** button, located at the bottom of window.

Statistics

The Statistics page for iSCSI ports contains a table of parameters and values, divided into two sections ([Figure 3-17](#)). The upper section contains statistics that are port specific, and the lower section contains shared statistics (common to both iSCSI ports).

- To refresh the statistics, click **Refresh** at the top of the window.
- To clear the statistics (set the values to zero), click **Clear**.

Information Advanced Configuration Statistics		
Shared Statistics		
Parameter	Value	
MACRxMulticast	0	
MACRxBroadcast	0	
IPTxPacketsCount	0	
IPTxBytesCount	0	
IPTxFragmentsCount	0	
IPRxPacketsCount	0	
IPRxBytesCount	0	
IPRxFragmentsCount	0	
IPDatagramReassemblyCount	0	
IPRxv6PacketsCount	0	
IPRxPacketErrorCount	0	
IPRxFragmentOverlapCount	0	
IPRxFragmentOutOfOrderCount	0	
IPFragmentReassemblyTimeoutCount	0	
TCPTxSegmentsCount	133385	
TCPTxBytesCount	11046006	
TCPRxSegmentsCount	148771	
TCPRxBytesCount	12341046	
TCPPersistTimerExpiredCount	0	
TCPRetransmitTimerExpiredCount	0	
TCPRxDuplicateACKCount	0	
TCPRxPureACKCount	0	
TCPTxDelayedACKCount	0	
TCPTxPureACKCount	0	
TCPRxSegmentErrorCount	0	
TCPRxSegmentOutOfOrderCount	0	
TCPRxWindowProbeCount	0	
TCPRxWindowUpdateCount	0	
ECCErrorCorrectionCount	0	
iSCSITxPDUCount	80014	
iSCSITxBytesCount	11046006	
iSCSIRxPDUCount	80014	
iSCSIRxBytesCount	12341046	
iSCSICompleteIOsCount	160028	
iSCSIUnexpectedIORxCount	0	
iSCSIFormatErrorCount	0	
iSCSIHeaderDigestErrorCount	0	
iSCSIDataDigestErrorCount	0	
iSCSISeqErrorCount	0	

Figure 3-17. iSCSI Port: Statistics Page

VP Groups

Expand the VP Groups branch in the router tree, and then select a VPGROUP node to view its details in the right pane, as shown in [Figure 3-18](#).

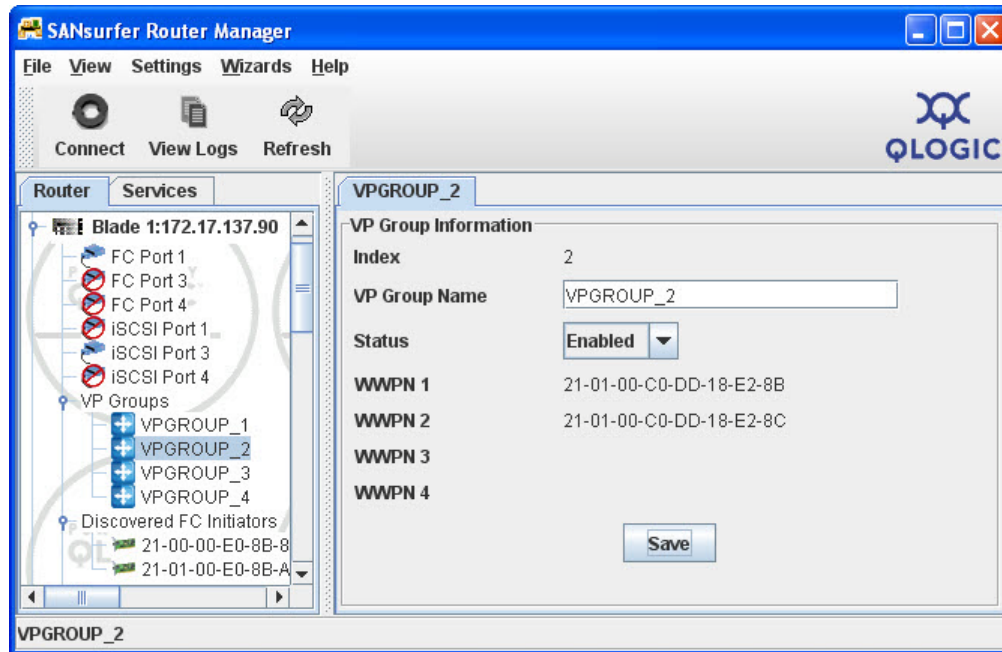


Figure 3-18. VP Groups: VPGROUP_x

The **VP Group Information** section includes the following details:

- **Index** is VPG index within the router blade.
- **VP Group Name** identifies the name of the selected VP Group. (To change the name, enable the VP Group, type a new name, and then click **Save**. **Refresh** the page to see the new name. For details, see “Renaming a Virtual Port Group” in the help system.)
- **Status** lets you set the VPG status: **Enabled** or **Disabled**. (For details, see “Enabling or Disabling a Virtual Port Group” in the help system.)
- **WWPN x** specifies the world wide port names for the Fibre Channel ports.

Discovered FC Initiators

Selecting the Discovered FC Initiators branch on the router tree does not provide any information in the right pane. Select a specific discovered Fibre Channel initiator node in the router tree to view the following pages in the right pane:

- “Information” on page 3-37
- “LUN List” on page 3-38

Information

The Information page for a discovered Fibre Channel initiator contains the initiator information shown in [Figure 3-19](#).

The screenshot shows a web-based configuration interface. At the top, there are two tabs: 'Information' and 'LUN List'. The 'Information' tab is active. Below the tabs is a form titled 'Initiator Information'. The form contains several fields: 'Node Name' with the value '50-06-01-60-C1-E0-0D-A2', 'Port Name' with '50-06-01-61-41-E0-0D-A2', 'Port ID' with '01-07-00', 'OS Type Selection' with a dropdown menu showing 'Linux', and 'Status' with the text 'Logged In'. A 'Save' button is positioned at the bottom right of the form area.

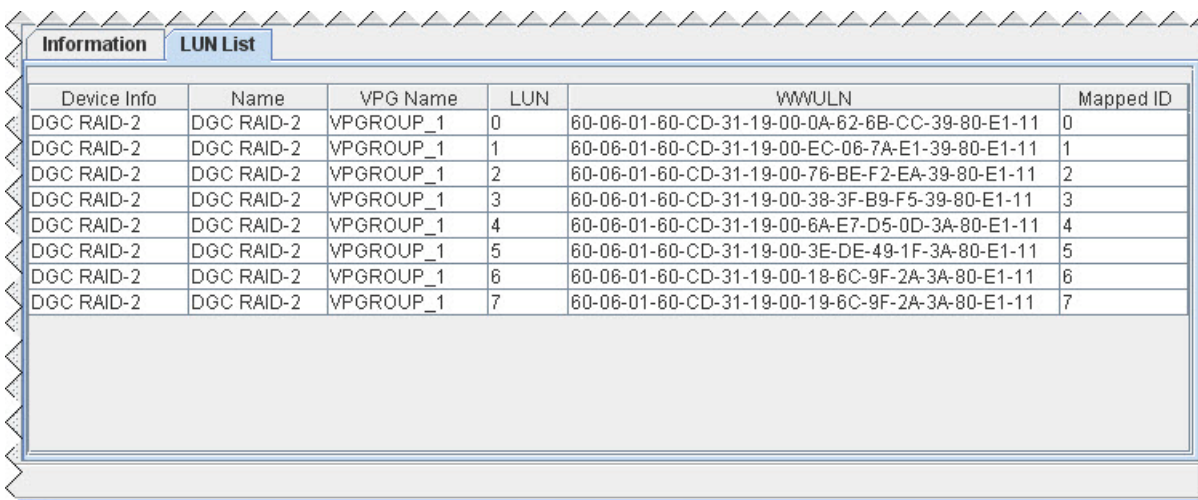
Figure 3-19. Discovered FC Initiators: Information Page

- **Node Name** identifies the initiator's world wide node name (WWNN).
- **Port Name** identifies the initiator's world wide port name (WWPN).
- **Port ID** identifies the fabric port ID.
- **OS Type Selection** provides options to select the operating system (OS) type for the discovered initiator. The iSR6200 router blade uses the OS type to enable OS-specific commands. Type options include: **Other**, **MS Windows 2003**, **Linux**, **HPUX**, **Mac**, **Solaris**, **VMware**, **OpenVMS**, **Windows 2008**, and **Windows 2012**.
- **Status** is the activity status for the selected initiator (for example, Logged In or Logged Out).

If you change the **OS Type Selection** value, click **Save** to preserve this setting.

LUN List

The LUN List page shows the device, name, VP Group name, WWULN, and mapped ID for the discovered Fibre Channel initiator that is selected in the left pane. The **LUN** column identifies the LUN presented through the array and the **Mapped ID** column identifies the LUN presented to the host. [Figure 3-20](#) shows an example.



The screenshot shows a web interface with two tabs: 'Information' and 'LUN List'. The 'LUN List' tab is active, displaying a table with the following columns: Device Info, Name, VPG Name, LUN, WWULN, and Mapped ID. The table contains eight rows of data, all with 'DGC RAID-2' in the first two columns and 'VPGROUP_1' in the third column. The LUN values range from 0 to 7, and the WWULN values are unique for each LUN. The Mapped ID values also range from 0 to 7.

Device Info	Name	VPG Name	LUN	WWULN	Mapped ID
DGC RAID-2	DGC RAID-2	VPGROUP_1	0	60-06-01-60-CD-31-19-00-0A-62-6B-CC-39-80-E1-11	0
DGC RAID-2	DGC RAID-2	VPGROUP_1	1	60-06-01-60-CD-31-19-00-EC-06-7A-E1-39-80-E1-11	1
DGC RAID-2	DGC RAID-2	VPGROUP_1	2	60-06-01-60-CD-31-19-00-76-BE-F2-EA-39-80-E1-11	2
DGC RAID-2	DGC RAID-2	VPGROUP_1	3	60-06-01-60-CD-31-19-00-38-3F-B9-F5-39-80-E1-11	3
DGC RAID-2	DGC RAID-2	VPGROUP_1	4	60-06-01-60-CD-31-19-00-6A-E7-D5-0D-3A-80-E1-11	4
DGC RAID-2	DGC RAID-2	VPGROUP_1	5	60-06-01-60-CD-31-19-00-3E-DE-49-1F-3A-80-E1-11	5
DGC RAID-2	DGC RAID-2	VPGROUP_1	6	60-06-01-60-CD-31-19-00-18-6C-9F-2A-3A-80-E1-11	6
DGC RAID-2	DGC RAID-2	VPGROUP_1	7	60-06-01-60-CD-31-19-00-19-6C-9F-2A-3A-80-E1-11	7

Figure 3-20. Discovered FC Initiators: LUN List Page

Discovered iSCSI Initiators

Selecting the Discovered iSCSI Initiators branch on the router tree does not provide any information in the right pane. Select a specific discovered iSCSI initiator node in the router tree to view the following pages in the right pane:

- [“Information” on page 3-39](#)
- [“LUN List” on page 3-40](#)

Information

The Information page for a discovered iSCSI initiator contains two sections: **Initiator Information** and **CHAP Settings**, as shown in [Figure 3-21](#).

The screenshot shows a web interface for configuring iSCSI initiators. The 'Information' tab is active, showing details for a specific initiator. The 'Initiator Information' section includes fields for the iSCSI alias, two IPv4 addresses, an OS type dropdown menu set to 'MS Windows', and a status indicator showing 'Logged In'. The 'CHAP Settings' section has a checked 'Enable CHAP' checkbox and a password field for the CHAP secret. A 'Save' button is located at the bottom of the form.

Figure 3-21. Discovered iSCSI Initiator: Information Page

Initiator Information

The **Initiator Information** section provides the following parameters:

- **iSCSI Alias** specifies the iSCSI initiator's alias, which the initiator provides when it logs into the iSR6200 router blade.
- **iSCSI IP Address x** shows the IPv4 address of the discovered iSCSI initiator.
- **iSCSI IPv6 IP Address x** shows the IPv6 IP address of the discovered iSCSI initiator.
- **OS Type Selection** provides options to select the operating system type for the discovered initiator. The iSR6200 router blade uses the OS type to enable OS-specific commands. Type options include: **Other**, **MS Windows 2003**, **Linux**, **HPUX**, **Mac**, **Solaris**, **VMware**, **OpenVMS**, **Windows 2008**, and **Windows 2012**.
- **Status** is the activity status for the selected initiator.

CHAP Settings

The **CHAP Settings** section contains the following parameters:

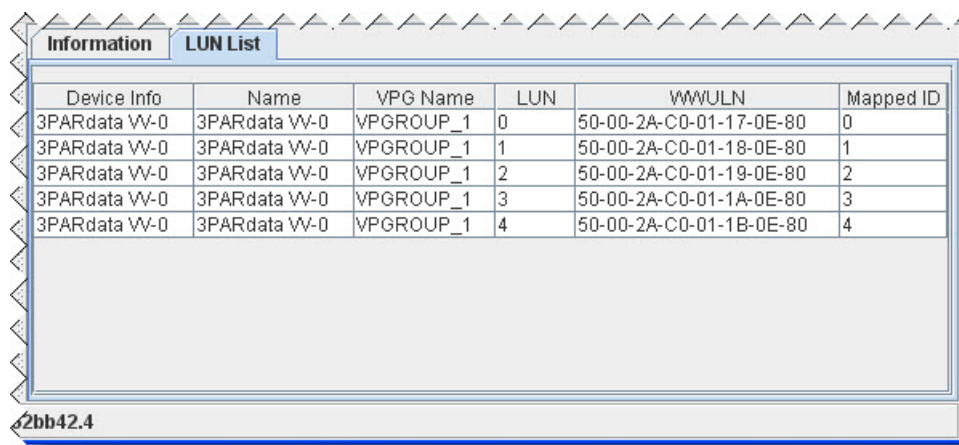
- **Enable CHAP** enables or disables CHAP support. Select the check box to enable this option; clear the check box to disable it.
- **CHAP Secret** lets you define the CHAP secret used for authenticating an iSCSI client. The box is available only when the **Enable CHAP** check box is selected.

NOTE

To apply changes, click the **Save** button, located at the bottom of window.

LUN List

The LUN List page lists LUNs mapped to the iSCSI initiator, as shown in [Figure 3-22](#).



Device Info	Name	VPG Name	LUN	WWULN	Mapped ID
3PARdata VV-0	3PARdata VV-0	VPGROUP_1	0	50-00-2A-C0-01-17-0E-80	0
3PARdata VV-0	3PARdata VV-0	VPGROUP_1	1	50-00-2A-C0-01-18-0E-80	1
3PARdata VV-0	3PARdata VV-0	VPGROUP_1	2	50-00-2A-C0-01-19-0E-80	2
3PARdata VV-0	3PARdata VV-0	VPGROUP_1	3	50-00-2A-C0-01-1A-0E-80	3
3PARdata VV-0	3PARdata VV-0	VPGROUP_1	4	50-00-2A-C0-01-1B-0E-80	4

Figure 3-22. Discovered iSCSI Initiator: LUN List Page

The LUN List page provides the following parameters:

- **Device Info** is the information provided by the target LUN as a result of issuing a SCSI INQUIRY command.
- **Name** is the target name. For Fibre Channel targets, the name is the WWPN.
- **VPG Name** is the name of virtual port group (VPG).
- **LUN** is the logical unit number.
- **WWULN** is the world wide unique LUN name (WWULN), also provided on page 83 of a SCSI INQUIRY command.

- **Mapped ID** identifies the LUN presented to the host.

FC Discovered Targets

Selecting the FC Discovered Targets branch in the router tree shows two pages in the right pane:

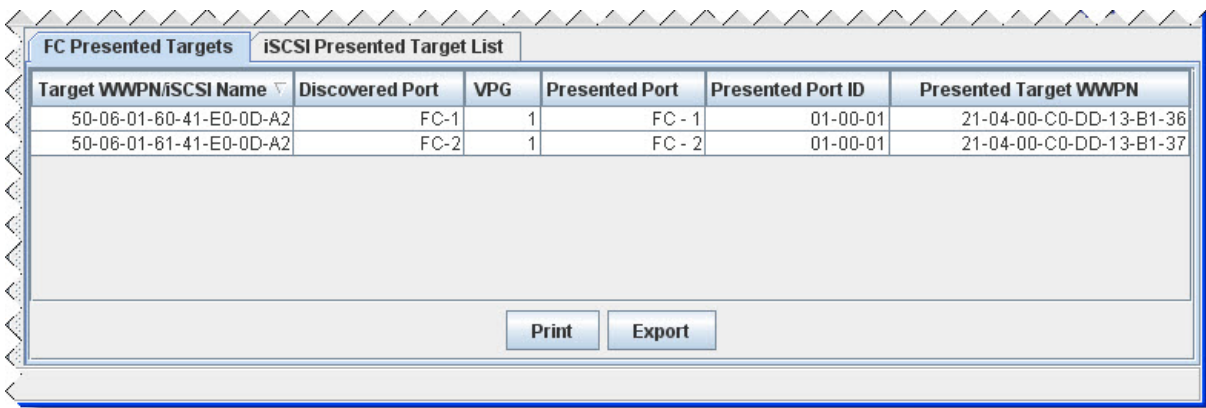
- “FC Presented Targets” on page 3-41
- “iSCSI Presented Target List” on page 3-42

Expand the FC Discovered Targets branch and then select a specific target node to view the following additional pages in the right pane for that target:

- “Information” on page 3-43
- “iSCSI Presented Target” on page 3-44
- “FC Presented Target” on page 3-45

FC Presented Targets

The FC Presented Targets page shows information for each Fibre Channel presented target, as shown in [Figure 3-23](#).



Target WWPN/iSCSI Name	Discovered Port	VPG	Presented Port	Presented Port ID	Presented Target WWPN
50-06-01-60-41-E0-0D-A2	FC-1	1	FC - 1	01-00-01	21-04-00-C0-DD-13-B1-36
50-06-01-61-41-E0-0D-A2	FC-2	1	FC - 2	01-00-01	21-04-00-C0-DD-13-B1-37

Figure 3-23. FC Discovered Targets: FC Presented Targets Page

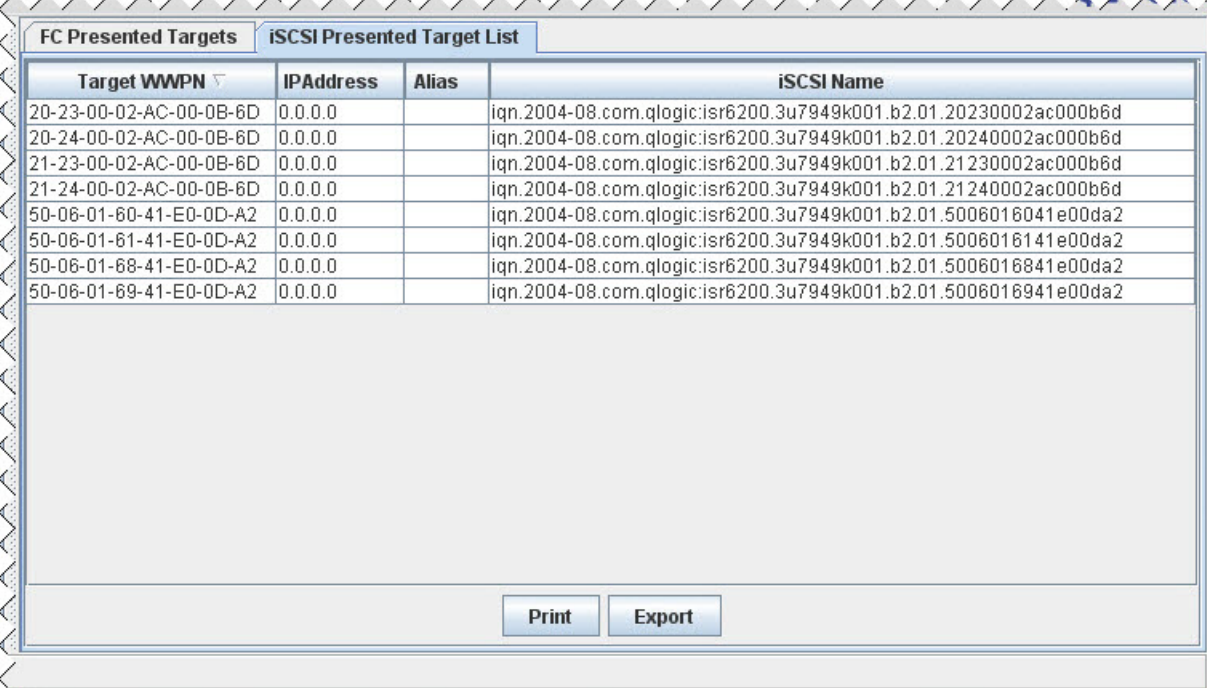
The FC Presented Targets page lists the following data for each Fibre Channel presented target:

- Target WWPN/iSCSI Name
- Discovered Port
- VPG
- Presented Port
- Presented Port ID
- Presented Target WWPN

To send the list of presented targets to a printer, click **Print**. To save the list to a .CSV file, click **Export**.

iSCSI Presented Target List

The iSCSI Presented Target List page (when viewed from the FC Discovered Targets node) shows information for each iSCSI presented target, as shown in Figure 3-24.



Target WWPN	IP Address	Alias	iSCSI Name
20-23-00-02-AC-00-0B-6D	0.0.0.0		iqn.2004-08.com.qlogic:isr6200.3u7949k001.b2.01.20230002ac000b6d
20-24-00-02-AC-00-0B-6D	0.0.0.0		iqn.2004-08.com.qlogic:isr6200.3u7949k001.b2.01.20240002ac000b6d
21-23-00-02-AC-00-0B-6D	0.0.0.0		iqn.2004-08.com.qlogic:isr6200.3u7949k001.b2.01.21230002ac000b6d
21-24-00-02-AC-00-0B-6D	0.0.0.0		iqn.2004-08.com.qlogic:isr6200.3u7949k001.b2.01.21240002ac000b6d
50-06-01-60-41-E0-0D-A2	0.0.0.0		iqn.2004-08.com.qlogic:isr6200.3u7949k001.b2.01.5006016041e00da2
50-06-01-61-41-E0-0D-A2	0.0.0.0		iqn.2004-08.com.qlogic:isr6200.3u7949k001.b2.01.5006016141e00da2
50-06-01-68-41-E0-0D-A2	0.0.0.0		iqn.2004-08.com.qlogic:isr6200.3u7949k001.b2.01.5006016841e00da2
50-06-01-69-41-E0-0D-A2	0.0.0.0		iqn.2004-08.com.qlogic:isr6200.3u7949k001.b2.01.5006016941e00da2

Figure 3-24. FC Discovered Targets: iSCSI Presented Target List Page

The iSCSI Presented Target List page shows the following data for each iSCSI presented target:

- Target WWPN
- IP Address
- Alias (if configured)
- iSCSI Name

To send the list of presented targets to a printer, click **Print**. To save the list to a .CSV file, click **Export**.

Information

Figure 3-25 shows the Information page for a Fibre Channel discovered target.

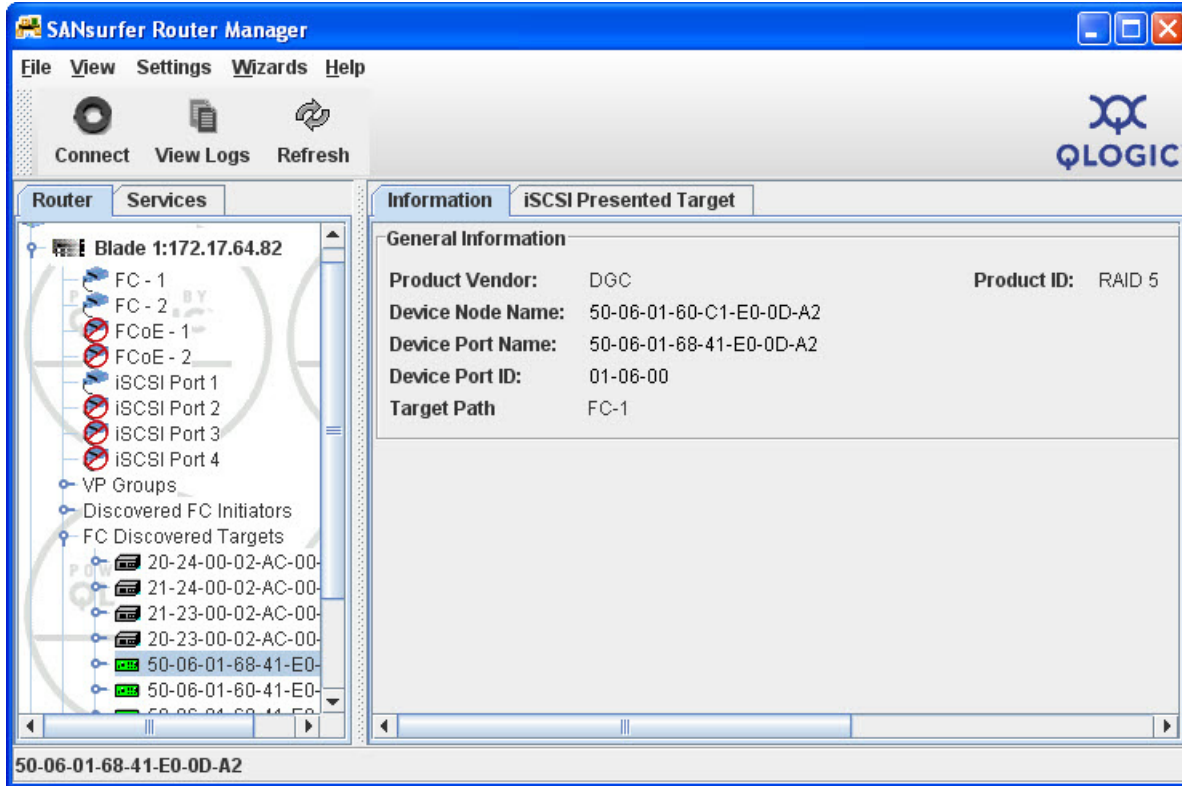


Figure 3-25. FC Discovered Targets: Information Page

The Information page provides the following information about the selected Fibre Channel target:

- **Product Vendor** is the product vendor as reported by the SCSI INQUIRY command.
- **Product ID** is the product ID as reported by the SCSI INQUIRY command.
- **Device Node Name** indicates the worldwide target node name.
- **Device Port Name** indicates the worldwide target port name.
- **Device Port ID** indicates the port ID of the target port.
- **Target Path** is the router port on which the target is discovered.

iSCSI Presented Target

The iSCSI Presented Target page provides detailed Fibre Channel target information and a list of the iSCSI presentations of the target, as shown in [Figure 3-26](#).

Information

iSCSI Presented Target

Device Product Vendor: HP

Device Product ID: HSV340

Device Product Rev: 0005

Device Node Name:

50-01-43-80-02-5D-A8-30

Device Port Name:

50-01-43-80-02-5D-A8-3E

Device Port ID:

01-01-00

TargetWWPN	IP Address	Alias	iSCSI Name
VPGROUP_1	10.0.5.67		iqn.1986-03.com.hp:fcgw.mpx200.0840e00002.b2.01.50014380025da83e
VPGROUP_1	10.0.5.67		iqn.1986-03.com.hp:fcgw.mpx200.0840e00002.b2.02.50014380025da83e

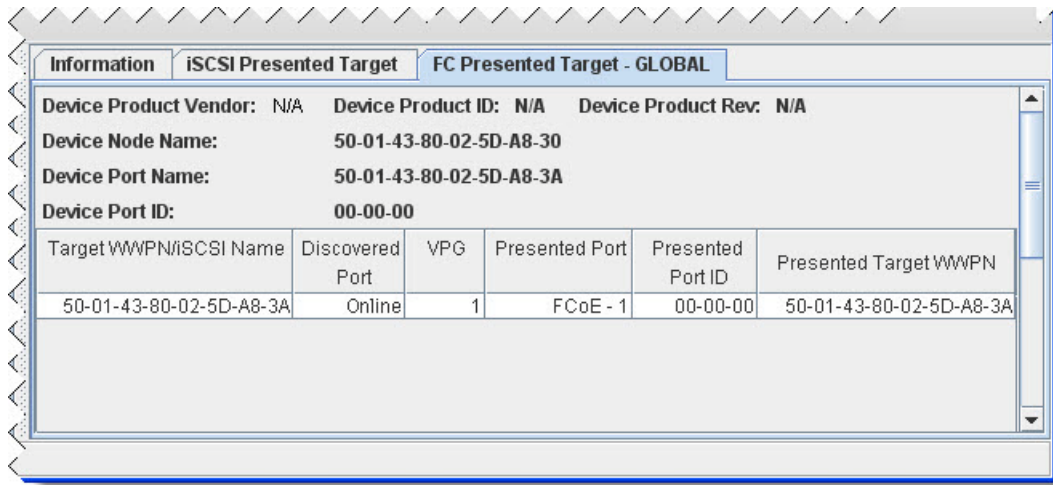
Figure 3-26. FC Discovered Target: iSCSI Presented Target Page

The iSCSI Presented Target page contains the following information:

- **Device Product Vendor** is the vendor name of the target device as reported by the SCSI INQUIRY command.
- **Device Product ID** is the product ID name of the target device as reported by the SCSI INQUIRY command.
- **Device Product Rev** is the product revision of the target device as reported by the SCSI INQUIRY command.
- **Device Node Name** is the WWNN of the target device.
- **Device Port Name** is the WWPN of the target device.
- **Device Port ID** is the target device's port ID.
- **Target WWPN** is the world wide port name of the target.
- **IP Address** is the IP address on which the target is presented.
- **Alias** is the iSCSI alias of the presented target.
- **iSCSI Name** is the presented target's iSCSI name.

FC Presented Target

The FC Presented Target page provides detailed Fibre Channel target information and a list of the Fibre Channel presentations of the target, as shown in [Figure 3-27](#). This page is only visible if a target map has been created for the selected Fibre Channel discovered target; otherwise the FC Presented Target tab is hidden for the selected FC discovered target.



Device Product Vendor:	N/A	Device Product ID:	N/A	Device Product Rev:	N/A
Device Node Name:	50-01-43-80-02-5D-A8-30				
Device Port Name:	50-01-43-80-02-5D-A8-3A				
Device Port ID:	00-00-00				
Target WWPN/iSCSI Name	Discovered Port	VPG	Presented Port	Presented Port ID	Presented Target WWPN
50-01-43-80-02-5D-A8-3A	Online	1	FCoE - 1	00-00-00	50-01-43-80-02-5D-A8-3A

Figure 3-27. FC Discovered Targets: FC Presented Target Page

The FC Presented Target page contains the following information:

- **Device Product Vendor** is the vendor name of the target device as reported by the SCSI INQUIRY command.
- **Device Product ID** is the product ID name of the target device as reported by the SCSI INQUIRY command.
- **Device Product Rev** is the product revision of the target device as reported by the SCSI INQUIRY command.
- **Device Node Name** is the WWNN of the target device.
- **Device Port Name** is the WWPN of the target device.
- **Device Port ID** is the target device's port ID.
- **Target/WWPN/iSCSI Name** is the presented target's name.
- **Discovered Port** is the presented target's discovered port.
- **VPG** is the presented target's VPG number.
- **Presented Port ID** is the presented target's port ID number.
- **Presented Target WWPN** is the presented target's WWPN.

Discovered LUN Information

For an FC Discovered Target, select a target, expand the VPGs below that target, and then select a LUN to view the Discovered LUN Information page in the right pane. This page provides details on the selected Fibre Channel target LUN.

Figure 3-28 shows the Discovered LUN Information page.

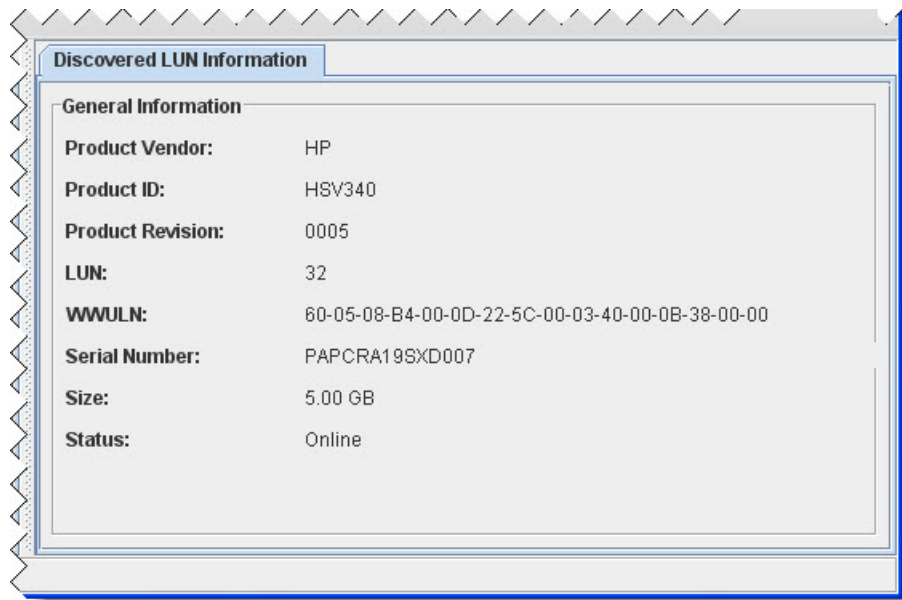


Figure 3-28. Discovered FC Target: Discovered LUN Information Page

The Discovered LUN Information page contains the following parameters:

- **Product Vendor** is the vendor name of the LUN as reported by the SCSI INQUIRY command.
- **Product ID** is the product ID of the LUN as reported by the SCSI INQUIRY command.
- **Product Revision** is the product revision of the LUN as reported by the SCSI INQUIRY command.
- **LUN** is the logical unit number.
- **WWULN** is the world wide unique name of the LUN as reported on page 0x83 of the SCSI INQUIRY command.
- **Serial Number** is the LUN serial number.
- **Size** indicates the LUN capacity in gigabytes.
- **Status** is the current state of the LUN, either **Online** or **Offline**.

iSCSI Discovered Targets

The **iSCSI Discovered Targets** branch on the router tree does not provide any information in the right pane. Select a discovered target to view the Information page for that target, as shown in [Figure 3-29](#).

The screenshot shows a web interface for the 'Information' page of an iSCSI target. It includes sections for General Information, iSCSI Alias, Connections, and CHAP Settings.

General Information

iSCSI Name: iqn.2001-05.com.equallogic:0-8a0906-6b1829a07-f13fb16ae204da81-100tb-03

iSCSI Alias

Connections

Connection State	IP Address	Connect Port	Data Digest	Header Digest	
Logged In	10.3.5.2	GE1	No	No	Log out

CHAP Settings

☐ Enable CHAP

CHAP Secret:

Save

Figure 3-29. iSCSI Discovered Targets: Information Page

Information

The Information page contains the following:

- **iSCSI Name** shows the presented iSCSI target's name.
- **iSCSI Alias** shows the user-defined friendly name, if defined.
- **Connections** section contains the following:
 - ☐ **Connection State** indicates whether the iSCSI target is logged in or logged out.
 - ☐ **IP Address** indicates the iSCSI target's IP address.
 - ☐ **Connect Port** indicates which iSCSI target the device discovered.
 - ☐ **Data Digest** indicates whether or not the data digest is enabled.

- ☐ **Header Digest** indicates whether or not the header digest is enabled.
- ☐ **Log out** and **Log in** buttons provides a way to log out of a logged in target or log into a logged out target.
- **CHAP Settings** provides an option you can use to set the CHAP option as follows:
 - ☐ **Enable CHAP** check box allows you to enable CHAP when connecting to this target.
 - ☐ **CHAP Secret** is the string used for the CHAP secret when connecting to this target, when the **Enable CHAP** option is enabled.

NOTE

If you change the **CHAP Settings**, you must click **Save** for the change to take effect.

iSCSI Presented Targets

Selecting the **iSCSI Presented Targets** branch on the router tree does not provide any information in the right pane. Expand the **iSCSI Presented Targets** branch, and then select a specific presented target to view the Information page for that target in the right pane.

Information

The Information page consists of two sections: **General Information** and **CHAP Settings**, as shown in [Figure 3-30](#) and described in the following sections.

The screenshot shows a web-based configuration interface for iSCSI targets. The main window is titled 'Information' and contains two sections: 'General Information' and 'CHAP Settings'. The 'General Information' section includes fields for 'iSCSI Name' (iqn.2004-08.com.qlogic:isr6200.3u7949k001.b1.01.21240002ac000b6d), 'iSCSI Alias', 'Product Vendor' (3PARdata), 'Product ID' (W), 'Product Revision' (0000), and 'Port'. The 'CHAP Settings' section includes a checkbox for 'Enable CHAP' (checked) and a 'CHAP Secret' field (masked with dots). A 'Save' button is located at the bottom right of the form. The status bar at the bottom left shows the iSCSI Name: iqn.2004-08.com.qlogic:isr6200.3u7949k001.b1.01.21240002ac000b6d.

Figure 3-30. iSCSI Presented Targets: Information Page

General Information

The **General Information** section contains the following parameters:

- **iSCSI Name** is the presented iSCSI target's name.
- **iSCSI Alias** is the presented iSCSI target's alias. You can change the alias by typing a valid name in the box.
- **Product Vendor** is the product vendor as reported by the SCSI INQUIRY command.
- **Product ID** is the product ID as reported by the SCSI INQUIRY command.
- **Product Revision** is the product revision as reported by the SCSI INQUIRY command.
- **IP Address** is the IP address of the presented iSCSI target.

CHAP Settings

The **CHAP Settings** section provides the following parameters:

- **Enable CHAP** enables or disables CHAP (Challenge Handshake Authentication Protocol) support. Select the check box to enable this option; clear the check box to disable it.
- **CHAP Secret** lets you define the CHAP secret used for authenticating an iSCSI client. The box is available only when the **Enable CHAP** check box is selected.

NOTE

To apply changes made to this window, click the **Save** button, located at the bottom of window.

FC Presented Targets

Selecting the **FC Presented Targets** branch on the router tree does not provide any information in the right pane. Expand the **FC Presented Targets** branch, and then select a specific presented target to view the Information page for that target in the right pane.

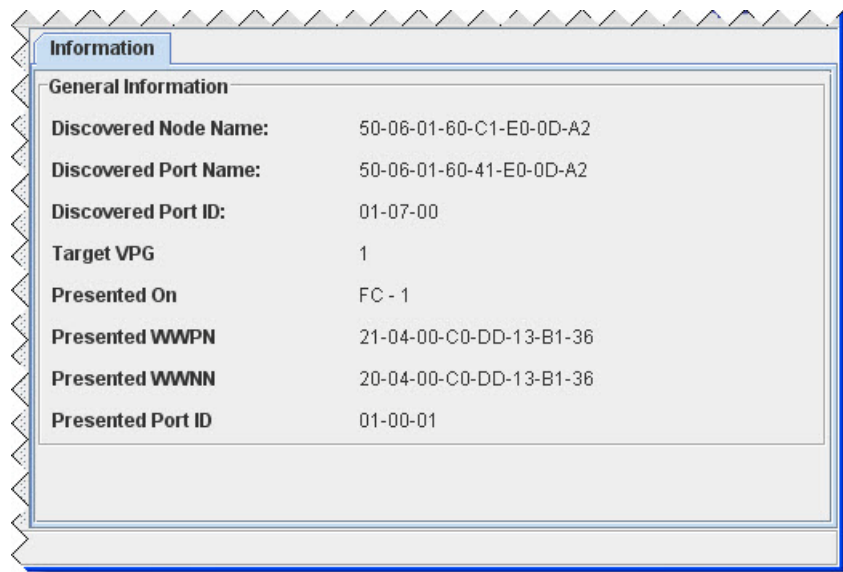


Figure 3-31. FC Presented Targets: Information Page

The Information page contains the following non-editable data:

- **Discovered Node Name** is the WWNN of the array's Fibre Channel target port.
- **Discovered Port Name** is the WWPN of the array's discovered target port.
- **Discovered Port ID** is the fabric ID that is assigned to the array's Fibre Channel target port.
- **Target VPG** is the VP group for which the presented target is created. For a global presentation this appears as "GLOBAL."
- **Presented On** is the iSR6200 portal on which the presented target is created.
- **Presented WWPN** is the WWPN created on the portal as the presented target for a discovered target.
- **Presented WWNN** is the WWNN created on the portal as the presented target for a discovered target.
- **Presented Port ID** is the port ID on the fabric for a router-presented target.

SAN-over-WAN Devices

Selecting the **SAN-over-WAN Devices** branch on the router tree does not provide any information in the right pane. Expand the **SAN-over-WAN Devices** branch and select a device to view the following pages in the right pane:

- ["Information" on page 3-52](#)
- ["iSCSI Presented Target" on page 3-52](#)

Information

The Information page for a SAN-over-WAN device shows general, non-editable product and device information, as shown in [Figure 3-32](#).

The screenshot shows a web interface with two tabs: "Information" (selected) and "iSCSI Presented Target". The "Information" tab contains a section titled "General Information" with the following fields:

Product Vendor:	N/A	Product ID:	N/A	Product Revision:	N/A
Device Node Name:	50-01-43-80-11-36-39-F0				
Device Port Name:	50-01-43-80-11-36-39-FB				
Device Port ID:	7C-00-03				
Target Path	FC-2				

Figure 3-32. SAN-over-WAN Devices: Information Page

iSCSI Presented Target

The iSCSI Presented Target page for a SAN-over-WAN device shows general, non-editable target device information, as shown in [Figure 3-33](#).

The screenshot shows a web interface with two tabs: "Information" and "iSCSI Presented Target" (selected). The "iSCSI Presented Target" tab contains the following fields:

Device Product Vendor:	N/A	Device Product ID:	N/A	Device Product Rev:	N/A
Device Node Name:	20-00-00-24-FF-31-5A-09				
Device Port Name:	21-00-00-24-FF-31-5A-09				
Device Port ID:	73-00-28				

TargetWWPN	IP Address	Alias	iSCSI Name

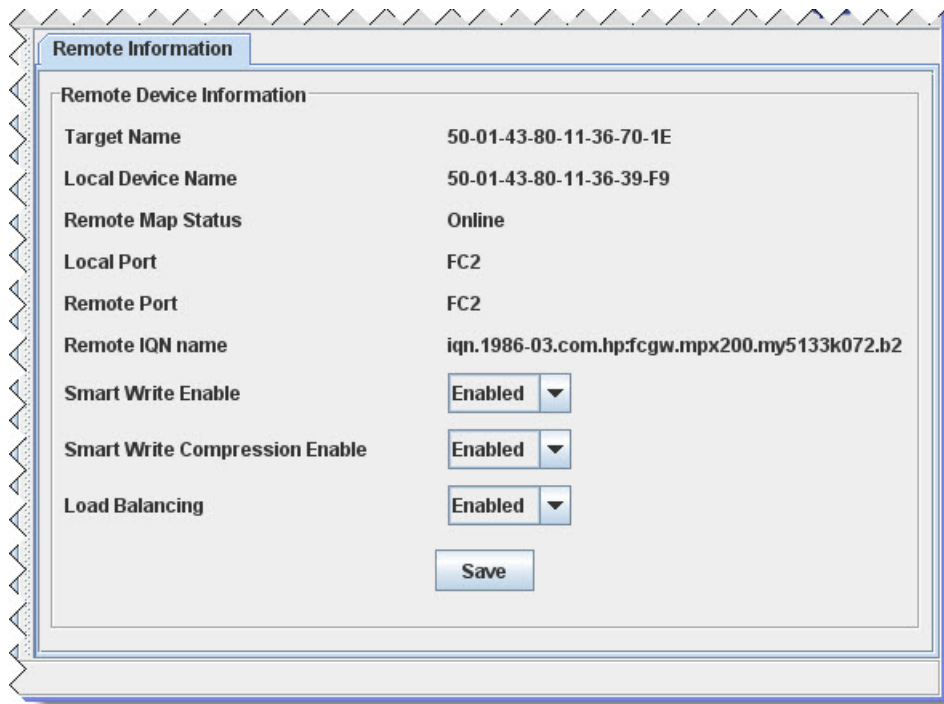
Figure 3-33. SAN-over-WAN Devices: iSCSI Presented Target Page

Remote Mapped Devices

Selecting the **Remote Mapped Devices** branch on the router tree does not provide any information in the right pane. Expand the **Remote Mapped Devices** branch and select a device to view the Remote Information page in the right pane.

Remote Information

The Remote Information page for a remote mapped device shows both editable and non-editable device information, as shown in [Figure 3-34](#).



The screenshot shows a web interface titled "Remote Information". It contains a section labeled "Remote Device Information" with the following fields:

Target Name	50-01-43-80-11-36-70-1E
Local Device Name	50-01-43-80-11-36-39-F9
Remote Map Status	Online
Local Port	FC2
Remote Port	FC2
Remote IQN name	iqn.1986-03.com.hp:fcgw.mpx200.my5133k072.b2
Smart Write Enable	Enabled ▼
Smart Write Compression Enable	Enabled ▼
Load Balancing	Enabled ▼

At the bottom of the form is a "Save" button.

Figure 3-34. Remote Mapped Devices: Remote Information Page

NOTE

If the **Remote Map Status** indicates that the device is offline, an additional field, **Offline Reason**, appears below it to specify why.

Arrays

Selecting the Arrays branch on the router tree does not provide any information in the right pane. Expand the Arrays branch and select a storage array to view and modify (as needed) the general information for that array (see [Information](#)).

Expand an array node to view the VP groups for the selected array, and then expand the VPGROUP_x node to view the LUNs for the selected group. The right pane displays the following pages for the selected LUN:

- “Discovered LUN Information” on page 3-57
- “LUN Presentation Information” on page 3-58

Information

Expand the Arrays branch and select a storage array to view and modify (as needed) the general information for that array, as shown in [Figure 3-35](#) and [Figure 3-36](#).

Information

General Information

Symbolic Name: EQLOGIC 100E-00-2

Product Vendor: EQLOGIC

Product ID: 100E-00

Product Revision:

Target Type: Source

Array Bandwidth: Max Available

User defined Bandwidth (MB/s):

Load Balancing: Enabled

Maximum Concurrent I/O: 128

Enable I/O Pacing: Disable

LUNInfo Display: LUN ID

Array License: Not Applied

Physical Target Ports

Blade ID	Port	IQN	IP Address
2	1	iqn.2001-05.com.equallogic:0-8a0906-679829a07-6a3fb16ae1a4da81-100t...	10.3.5.2

Save

Figure 3-35. Arrays: Information Page for Source and Src+Dest Arrays

Information

General Information

Symbolic Name: 3PARdata VV-0

Product Vendor: 3PARdata

Product ID: VV

Product Revision:

Target Type: Destination ▼

Load Balancing: Enabled ▼

LUNInfo Display: LUN ID ▼

Breakup IO: Disable ▼

Compression: Enable ▼

Array License: Not Applied

Physical Target Ports

Blade ID	Port	WWPN	Import Path
1	1	21-11-00-02-AC-00-0B-6D [Imported]	10.2.5.99
1	2	20-11-00-02-AC-00-0B-6D [Imported]	10.2.5.99
1	3	21-12-00-02-AC-00-0B-6D [Imported]	10.2.5.99
1	4	20-12-00-02-AC-00-0B-6D [Imported]	10.2.5.99

Save

Figure 3-36. Arrays: Information Page for Imported Arrays

The Information page for a storage array contains the following general information, some of which is editable:

- **Symbolic Name** is the user-defined array name.
- **Product Vendor** is the product vendor as reported by the SCSI INQUIRY command.
- **Product ID** is the product ID of the LUN as reported by the SCSI INQUIRY command.

- **Product Revision** is the product revision of the LUN as reported by the SCSI INQUIRY command.
- **Target Type** for the array can be specified as either **Source**, **Destination**, **Src+Dest** (both source and destination type), or **None**.
- **Array Bandwidth** (for source targets) can be specified as one of the following: **Slow (50BMB/s)**, **Medium (200BMB/s)**, **Fast (1600MB/s)**, **User Defined**, or **Max Available**. (This field is shown only for source arrays.)
- **User-defined Bandwidth (MB/s)** becomes available if the selected **Array Bandwidth** setting is **User Defined**. (This field is shown only for source arrays.)
- **Load Balancing** is either **Enabled** or **Disabled** for this array.
- **Maximum Concurrent I/O** (for source targets) indicates the maximum quantity of data migration I/Os that can be issued concurrently to the source storage array. The default is **128**. If the storage array can handle a larger number of I/Os, select **256**. If the storage array cannot handle 128 I/Os, select **64**. This setting is used to control the migration I/O to a source array, depending on the host I/O activity. (This field is shown only for source arrays.)
- **Enable I/O Pacing** to control automatic throttling and pacing of migration I/O. I/O pacing is used during data migration to limit I/O on a single array from consuming the iSR6200's bandwidth, and to maximize host and migration I/O performance. The iSR6200 intelligently manages concurrent migration I/Os to maximize overall migration throughput. If a queue full or busy condition is detected, the iSR6200 throttles the migration I/O until it detects the array's queue full or busy condition. When the condition is cleared, it starts issuing more migration I/Os. (This field is shown only for source arrays.)
- **LUN Info Display** determines whether the array's LUNs are identified by **LUN ID**, **WWULN**, or **Serial Number**.
- **Breakup IO** is either **Enabled** or **Disabled** for this imported array. Enable this setting to break up into smaller packages the I/O from the remote system. (This field is shown only for imported arrays.)
- **Compression** is either **Enabled** or **Disabled** for this imported array. Enable this setting to compress data on the blade before sending it to the peer (remote) blade during remote migration using native IP. Compression improves the performance of the I/O. (This field is shown only for imported arrays.)
- **Array License** shows whether or not a data migration array license has been applied to the array.

■ **Physical Target Ports** information includes:

- ☐ **Blade ID** identifies the iSR6200 blade (1 or 2) on which the array is located.
- ☐ **Port** specifies the target port number.
- ☐ (This field differs depending on the type of array selected in the router tree.) **IQN** specifies the target port's iSCSI qualifying name, or **WWPN** specifies the target port WWPN for an imported array.
- ☐ (This field differs depending on the type of array selected in the router tree.) **IP Address** specifies the array's IP address, or **Import Path** indicates the connected router's IP address.

NOTE

To apply changes made to this window, click the **Save** button, located at the bottom of the window.

Discovered LUN Information

The Discovered LUN Information page ([Figure 3-37](#)) shows information for the selected array LUN.

The screenshot shows a window titled "Discovered LUN Information" with two tabs: "Discovered LUN Information" (selected) and "LUN Presentation Information". The "General Information" section contains the following details:

- Product Vendor: 3PARdata
- Product ID: W
- Product Revision: 0000
- LUN: 1
- WWULN: 50-00-2A-C0-0C-7E-0B-6D
- Serial Number: 0C7E0B6D
- Size: 100.00 GB
- Status: Online

The "LUN Path Info" section contains a table with the following data:

Controller ID	WWPN	Port ID	Path Status
-	21-11-00-02-AC-00-0B-6D	00-00-00	Active, Current
-	20-11-00-02-AC-00-0B-6D	00-00-00	Active
-	21-12-00-02-AC-00-0B-6D	00-00-00	Offline
-	20-12-00-02-AC-00-0B-6D	00-00-00	Offline

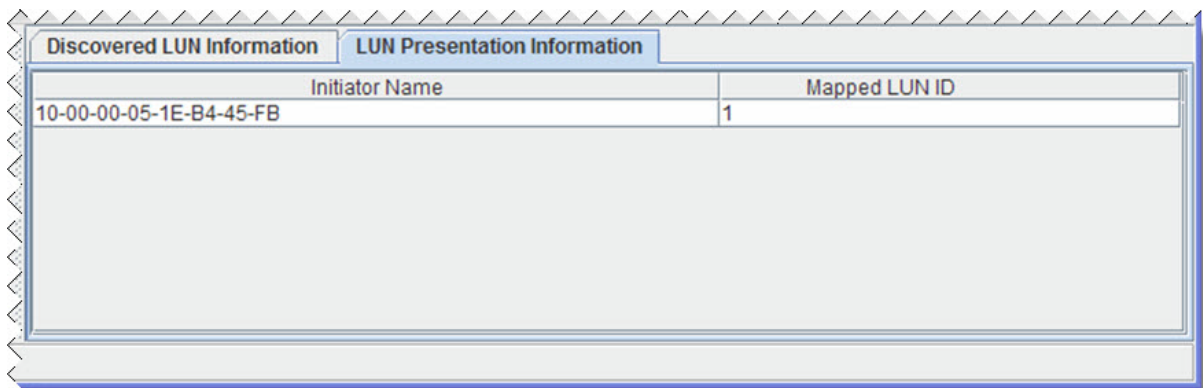
Figure 3-37. Arrays: Discovered LUN Information Page

The Discovered LUN Information page for an array LUN contains the following:

- **Product Vendor** is the product vendor as reported by the SCSI INQUIRY command.
- **Product ID** is the product ID of the LUN as reported by the SCSI INQUIRY command.
- **Product Revision** is the product revision of the LUN as reported by the SCSI INQUIRY command.
- **LUN** is the number.
- **WWULN** is the world wide unique LUN name.
- **Serial Number** is the serial number of the LUN.
- **Size** specifies the LUN size.
- **Status** indicates whether the LUN is online or offline.
- **LUN Path Info** specifies the path status for each target device reporting this LUN.

LUN Presentation Information

The LUN Presentation page ([Figure 3-38](#)) shows information for the selected array LUN.



Discovered LUN Information		LUN Presentation Information	
Initiator Name		Mapped LUN ID	
10-00-00-05-1E-B4-45-FB		1	

Figure 3-38. Arrays: LUN Presentation Information Page

The LUN Presentation Information page for an array LUN contains the following columns of information:

- **Initiator Name** column lists the WW:PN of the initiator port.
- **Mapped LUN ID** column lists the ID at which the LUN is mapped to the initiator.

FCIP Routes

Selecting the FCIP Routes branch on the router tree does not provide any information in the right pane. Select a specific FCIP Route Info *n* node in the router tree to view the following pages in the right pane:

- [“FCIP Route Info” on page 3-60](#)
- [“Statistics” on page 3-65](#)

FCIP Route Info

Figure 3-39 shows the FCIP Route Info page.

The screenshot shows the 'FCIP Route Info' configuration page. The page has two tabs: 'FCIP Route Info' (selected) and 'Statistics'. The configuration area contains various settings for FCIP interfaces, including status, ports, link status, IP addresses, subnet mask, gateway, jumbo frames, TCP window size, window scaling, port number, gigabit ethernet speed, flow control, VLAN settings, and bandwidth. A 'Save' button is at the bottom.

Parameter	Value
FCIP Interfaces Status	Enabled
FC Port	2
FC Link Status	Up
GigE Port	2
GigE Link Status	Up
Local IP Address	30.30.30.30
Remote IP Address	30.30.30.31
Subnet Mask	255.255.255.0
Gateway IP Address	0.0.0.0
Jumbo Frames	Jumbo
	9000
TCP Window Size	32768
Window Scaling	Enabled
Window Scaling Factor	7
TCP Port Number:	3225
Programmed GigE Port Speed	Auto
GigE Port Speed	1Gbs/FDX
GigE Port Flow Control	Enabled
VLAN Enabled	Disabled
VLAN ID	0
VLAN Priority	0
FCIP SW Compression	Auto
Bandwidth (Mbit/sec)	1000

Save

Figure 3-39. FCIP Routes: FCIP Route Info Page

The FCIP Route Info page contains the following information for the currently selected FCIP route:

- **FCIP Interfaces Status** reflects the state (**Enabled** or **Disabled**) of the FCIP route, as specified by the user when a route is created or modified.
- **FC Port** indicates the Fibre Channel port that is assigned to the corresponding FCIP route.
- **FC Link Status** indicates the link state (**Up** or **Down**) of the FCIP route.
 - ☐ **Up** indicates the FCIP route is available for use. An **FC Link Status** of **Up** requires a TCP connection between the two routers, and that the corresponding Fibre Channel ports of the routers are up (link established).
 - ☐ **Down** indicates the FCIP route is not available for use.
- **GigE Port** indicates the gigabit Ethernet (GbE) port that is assigned to the corresponding FCIP route.
- **GigE Link Status** indicates the link state (**Up** or **Down**) of the GbE port assigned to the FCIP route.
 - ☐ **Up** indicates the GigE port is available for use (link established).
 - ☐ **Down** indicates the GigE Port is not available for use (cable disconnected, negotiation failure, and so on).
- **Local IP Address** is the IP address assigned to the local router. The local router for FCIP traffic generates IP datagrams with the **Source IP Address** set to the value of the **Local IP Address**.
- **Remote IP Address** is the IP address assigned to the remote router. The local router for FCIP traffic generates IP datagrams with the **Destination IP Address** set to the value of the **Remote IP Address**.
- **Subnet Mask** indicates the subnet mask to be used with the local and remote IP addresses.
- **Gateway IP Address** indicates the IP address of the entrance to another network. If the IP addresses of the FCIP routers are not in the same network, the gateway IP address specifies where the routers send their traffic to be forwarded by the gateway.
- **Jumbo Frames** indicates that the use of jumbo Ethernet frames is enabled. Jumbo frames are Ethernet frames with payloads greater than 1500 bytes, with a maximum size of 9000 bytes. Using jumbo frames requires all the network equipment in the route to be configured for jumbo frames. Jumbo frames can increase bandwidth in some networks because the number of headers to be processed is decreased when each frame contains more user data. However, some networks may defer or discard jumbo frames when their buffer resources run low.

Select one of the following options for jumbo frames:

- ☐ **Jumbo** improves data transfer performance, but requires all switches, routers, and devices to support and be configured for jumbo frames. If any of the equipment is not configured for jumbos that device truncates frames that exceed its MTU size (typically 1,500 bytes).
 - ☐ **Normal** is a common setting that works in typical configurations. If you cannot configure all the network equipment in a route for jumbo frames, select normal (maximum of 1,500 bytes per frame).
 - ☐ **Other** enables the setting of the frame payload size to a specific value. This setting is typically required when IP traffic is encrypted, because the encryption adds overhead to each frame and reduces the size of the available frame payload (usually less than 1,500 bytes). If the network has some equipment with an MTU size less than 1,500, select **Other** and set the size to the smallest MTU of the network equipment comprising the route.
- **TCP Window Size** indicates the maximum size (in bytes) of the TCP window, which is the number of unacknowledged bytes. TCP transmits data to the remote peer until the window is full (number of unacknowledged bytes equals TCP window size). After the window is full, new data transmission is halted until acknowledgements for sent data are received from the remote peer.
 - **Window Scaling** indicates whether TCP window scaling is enabled or disabled. TCP window scaling applies a multiplier to the **TCP Window Size** to extend the TCP window size beyond the maximum value originally defined for TCP.
 - **Window Scaling Factor** is the multiplier (0–9) to be applied to the **TCP Window Size** when **Window Scaling** is enabled, as shown in [Table 3-2](#).

Table 3-2. TCP Window Scaling Factor

TCP Window Size (in bytes)	Scale Factor	Actual Window Size (in bytes)
32767	0 (scaling disabled)	32767
32767	1	64534
32767	2	131068
32767	3	262136
32767	4	524272
32767	5	1048544

Table 3-2. TCP Window Scaling Factor (Continued)

TCP Window Size (in bytes)	Scale Factor	Actual Window Size (in bytes)
32767	6	2097088
32767	7	4194176
32767	8	8388352
32767	9	16776704

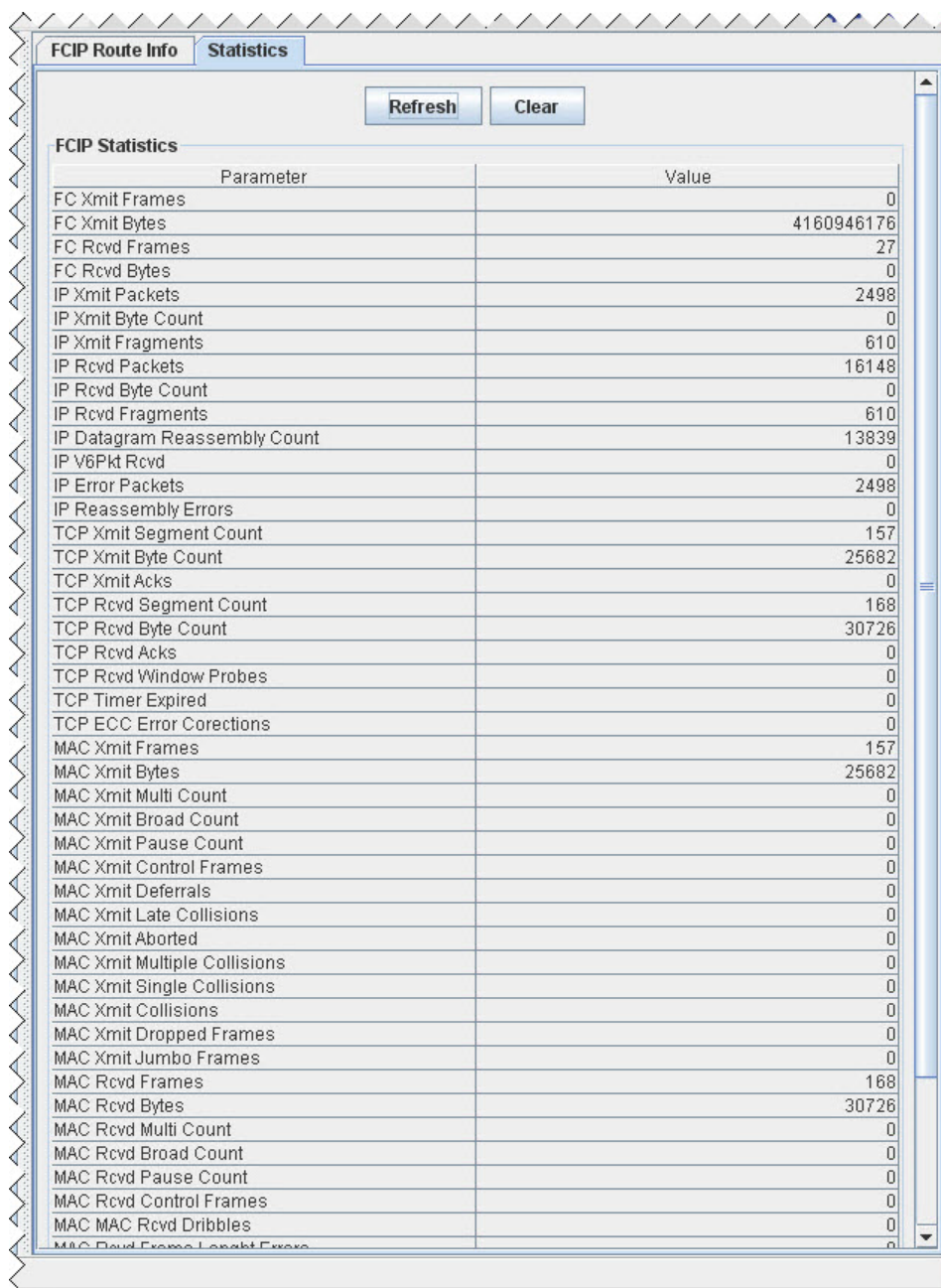
- **TCP Port Number** indicates the TCP port number on which the FCIP server listens for TCP connections; the default value for FCIP is **3225**.
- **Programmed GigE Port Speed** indicates the value specified for the GbE port speed by the user when the FCIP route was created or modified. Select one of the following values:
 - ☐ **Auto** allows the router to negotiate the link speed with the peer port. The router advertises speeds of 1Gbps and 100Mbps.
 - ☐ **100 Mbps** forces the port link speed to 100Mbps.
 - ☐ **1 Gbps** forces the link speed to 1Gbps. With this option, the router negotiates with the peer port, but only advertises a speed of 1Gbps.
- **GigE Port Speed** indicates the actual value of the GbE port speed. Typically, this value is the same as the **Programmed GigE Port Speed**. However, when the **Programmed GigE Port Speed** is **Auto**, this field indicates the negotiated port speed.
- **GigE Port Flow Control** indicates whether flow control (IEEE802.3x Pause) is enabled or disabled. The flow control option is available only when the **Programmed GigE Port Speed** is set to a value (not **Auto**). When enabled, the corresponding GbE port sends and receives Ethernet pause frames. When pause frames are received, the port suspends sending Ethernet traffic. When the port runs low on receive buffers, it sends a pause frame.
- **VLAN Enabled** indicates whether the use of virtual LANs is enabled or disabled.
- **VLAN ID** specifies the VLAN ID assigned to the FCIP route when VLAN use is enabled. The VLAN ID segregates traffic in a LAN.

- **VLAN Priority** specifies the priority of the VLAN assigned to the FCIP route when VLAN use is enabled. In a network with multiple VLANs, the **VLAN Priority** box prioritizes Ethernet traffic by giving higher preference to traffic in the network over non-VLAN traffic and traffic from VLANs with lower priorities. Level 1 is the lowest priority, level 7 is the highest priority, and level 0 specifies no VLAN.
- **FCIP SW Compression** indicates whether software compression is enabled, disabled, or automatic. Depending on the data, software compression may result in lower bandwidth use. If the data are highly compressible, the compressed FCIP PDU is significantly smaller than the original Fibre Channel frame.
- **Bandwidth (Mbit/sec)** allows you to specify the amount of WAN bandwidth the FCIP route is allowed to consume. If there are data available to the router to transmit, the router limits the transmit rate to this value.

If you modify the FCIP route information on this page, click **Save** to preserve your changes.

Statistics

For the FCIP route currently selected in the tree pane, the Statistics page lists parameters and values, as shown in [Figure 3-40](#). To update the statistics, click **Refresh**. To reset all values to zero, click **Clear**.



Parameter	Value
FC Xmit Frames	0
FC Xmit Bytes	4160946176
FC Rcvd Frames	27
FC Rcvd Bytes	0
IP Xmit Packets	2498
IP Xmit Byte Count	0
IP Xmit Fragments	610
IP Rcvd Packets	16148
IP Rcvd Byte Count	0
IP Rcvd Fragments	610
IP Datagram Reassembly Count	13839
IP V6Pkt Rcvd	0
IP Error Packets	2498
IP Reassembly Errors	0
TCP Xmit Segment Count	157
TCP Xmit Byte Count	25682
TCP Xmit Acks	0
TCP Rcvd Segment Count	168
TCP Rcvd Byte Count	30726
TCP Rcvd Acks	0
TCP Rcvd Window Probes	0
TCP Timer Expired	0
TCP ECC Error Corections	0
MAC Xmit Frames	157
MAC Xmit Bytes	25682
MAC Xmit Multi Count	0
MAC Xmit Broad Count	0
MAC Xmit Pause Count	0
MAC Xmit Control Frames	0
MAC Xmit Deferrals	0
MAC Xmit Late Collisions	0
MAC Xmit Aborted	0
MAC Xmit Multiple Collisions	0
MAC Xmit Single Collisions	0
MAC Xmit Collisions	0
MAC Xmit Dropped Frames	0
MAC Xmit Jumbo Frames	0
MAC Rcvd Frames	168
MAC Rcvd Bytes	30726
MAC Rcvd Multi Count	0
MAC Rcvd Broad Count	0
MAC Rcvd Pause Count	0
MAC Rcvd Control Frames	0
MAC MAC Rcvd Dribbles	0
MAC Rcvd Frame Length Errors	0

Figure 3-40. FCIP Routes: Statistics Page

The Statistics page for the selected FCIP route shows the values of the following parameters:

- **FC Xmit Frames** is the number of Fibre Channel frames transmitted by the Fibre Channel port of the FCIP route.
- **FC Xmit Bytes** is the number of Fibre Channel bytes transmitted by the Fibre Channel port of the FCIP route.
- **FC Rcvd Frames** is the number of Fibre Channel frames received by the Fibre Channel port of the FCIP route.
- **FC Rcvd Bytes** is the number of Fibre Channel bytes received by the Fibre Channel port of the FCIP route.
- **IP Xmit Packets** is the number of IP datagrams transmitted by the GbE port of the FCIP route.
- **IP Xmit Byte Count** is the number of IP bytes transmitted by the GbE port of the FCIP route.
- **IP Xmit Fragments** is the number of IP datagram fragments transmitted by the GbE port of the FCIP route. IP datagrams are fragmented when the datagram is larger than the Ethernet maximum transmission unit (MTU) size.
- **IP Rcvd Packets** is the number of IP datagrams received by the GbE port of the FCIP route.
- **IP Rcvd Byte Count** is the number of IP bytes received by the GbE port of the FCIP route.
- **IP Rcvd Fragments** is the number of IP datagram fragments received by the GbE port of the FCIP route.
- **IP Datagram Reassembly Count** is the number of IP datagrams reassembled from received fragments.
- **IP V6Pkt Rcvd** is the number of IPv6 datagrams received by the GbE port of the FCIP route.
- **IP Error Packets** is the number of IP datagrams with bad checksums received by the GbE port of the FCIP route.
- **IP Reassembly Errors** is the number of IP datagram fragments that could not be reassembled into a complete datagram.
- **TCP Xmit Segment Count** is the number of TCP segments transmitted by the GbE port of the FCIP route.
- **TCP Xmit Byte Count** is the number of TCP bytes transmitted by the GbE port of the FCIP route.

- **TCP Xmit Acks** is the number of TCP acknowledgements transmitted by the GbE port of the FCIP route. Acknowledgements are sent to inform the peer of data that was successfully received.
- **TCP Rcvd Segment Count** is the number of TCP segments received by the GbE port of the FCIP route.
- **TCP Rcvd Byte Count** is the number of TCP bytes received by the GbE port of the FCIP route.
- **TCP Rcvd Acks** is the number of TCP acknowledgements received by the GbE port of the FCIP route.
- **TCP Rcvd Window Probes** is the number of TCP window probes transmitted by the GbE port of the FCIP route. Window probes are sent to determine if the peer has opened the TCP window enough for the more data to be sent by the peer issuing the probe.
- **TCP Timer Expired** is the number of TCP segment retransmissions.
- **TCP ECC Error Corrections** is the number of data corrections performed in the packet data memory.
- **MAC Xmit Frames** is the number of Ethernet frames transmitted by the GbE port of the FCIP route.
- **MAC Xmit Bytes** is the number of Ethernet bytes transmitted by the GbE port of the FCIP route.
- **MAC Xmit Multi Count** is the number of multicast Ethernet frames transmitted by the GbE port of the FCIP route.
- **MAC Xmit Broad Count** is the number of broadcast Ethernet frames transmitted by the GbE port of the FCIP route.
- **MAC Xmit Pause Count** is the number of Ethernet pause frames transmitted by the GbE port of the FCIP route.
- **MAC Xmit Control Frames** is the number of Ethernet control frames transmitted by the GbE port of the FCIP route.

Ethernet Collision Statistics

The following statistics relate to Ethernet collisions that may occur when the Ethernet port is in half-duplex mode. Because half-duplex mode is not currently supported, the values for these statistics should always be zero.

- **MAC Xmit Deferrals** is the number of Ethernet frame transmissions deferred due to collisions by the GbE port of the FCIP route.
- **MAC Xmit Late Collisions** is the number of late collisions that occurred while transmitting an Ethernet frame.
- **MAC Xmit Aborted** is the number of aborted Ethernet frame transmissions due to collisions.
- **MAC Xmit Multiple Collisions** is the number of multiple collisions that occurred during Ethernet frame transmission.
- **MAC Xmit Single Collisions** is the number of single collisions that occurred during Ethernet frame transmission.
- **MAC Xmit Collisions** is the number of collisions that occurred during Ethernet frame transmission.
- **MAC Xmit Dropped Frames** is the number of Ethernet frames dropped due to the transmit FIFO being full. This situation can occur when collisions block the progress of Ethernet transmission.
- **MAC Xmit Jumbo Frames** is the number of Jumbo Ethernet frames transmitted by the GbE port of the FCIP route. Jumbo frames are frames with a payload greater than 1500 bytes.
- **MAC Rcvd Frames** is the number of Ethernet frames received by the GbE port of the FCIP route.
- **MAC Rcvd Bytes** is the number of Ethernet bytes received by the GbE port of the FCIP route.
- **MAC Rcvd Multi Count** is the number of multicast Ethernet frames received by the GbE port of the FCIP route.
- **MAC Rcvd Broad Count** is the number of Broadcast Ethernet frames received by the GbE port of the FCIP route.
- **MAC Rcvd Pause Count** is the number of Ethernet pause frames received by the GbE port of the FCIP route.
- **MAC Rcvd Control Frames** is the number of Ethernet control frames received by the GbE port of the FCIP route.
- **MAC Rcvd Dribbles** is not used and should always be zero.
- **MAC Rcvd Frame Length Errors** is the number of Ethernet control frames received by the GbE port of the FCIP route with 802.3 frame length errors.

- **MAC Rcvd Jabbers** is the number of “jabber” (long transmission) errors received by the GbE port of the FCIP route. Not valid when the port speed is 1Gbps.
- **MAC Rcvd Carrier Sense Errors** is the number of carrier sense errors received by the GbE port of the FCIP route. Not valid when the port speed is 1Gbps.
- **MAC Rcvd Dropped Frames** is the number of Ethernet frames dropped by the GbE port of the FCIP route due to inter-packet gap violations.
- **MAC Rcvd CRC Errors** is the number of Ethernet frames received and dropped by the GbE port of the FCIP route due to CRC verification failure.
- **MAC Rcvd Encoding Error** is the number of encoded characters received and dropped by the GbE port of the FCIP route due to encoding errors.
- **MAC Rcvd Length Errors** is the number of Ethernet frames received and dropped by the GbE port of the FCIP route because the size is greater than the current MTU. This situation occurs when jumbo frames are received when jumbos are not enabled for the GbE port.
- **Compression Ratio Average** is the calculated ratio of original size to compressed frame size when **FCIP SW Compression** is enabled on the FCIP Route Info page (see [“FCIP Route Info” on page 3-60](#)). The result is then incorporated with previous results into an average value that indicates the compressibility of the data.

Data Management LUNs

Selecting the Data Management LUNs branch on the router tree does not provide any information in the right pane. Select a specific data management LUN node in the router tree to view the `<DML_WWULN>` page in the right pane. Data management LUNs are identified by their world wide unique LUN name.

<DML_WWULN> Page

The <DML_WWULN> page lists non-editable information for the selected data management LUN, as shown in [Figure 3-41](#).



The screenshot shows a web interface window titled "60-90-A0-78-A0-29-98-67-81-DA-A4-E1-6A-B1-3F-6A". Inside the window, under the heading "Data Management LUN Info", the following information is displayed:

Current Master Blade	Blade-2
Symbolic Name	Data Mgmt Lun 0::1
LUN Type	DRL [Master DML]
DML State	Active
Owner Serial Number	0840E00002
Creator Blade ID	1
LUN VPG:ID	1:0
Array Symbolic Name	EQLOGIC 100E-00-2
WWULN	60-90-A0-78-A0-29-98-67-81-DA-A4-E1-6A-B1-3F-6A
LUN State	Online
Free/Total Metadata Extents	8192 / 8192
Free/Total Data Extents	100 / 100

Figure 3-41. Data Management LUNs: <DML_WWULN> Page

The following information is listed under **Data Management LUN Info**:

- **Current Master Blade** indicates the blade that was booted up before its peer. That blade becomes the master for the existing DMLs.
- **Symbolic Name** indicates the data management LUN number on the owner blade on which the LUN was created, as well as the owner blade number, in the format **<LUN number>::<blade number>**.
- **LUN Type** indicates whether the selected LUN is a **DML** or **Master DML**.
- **DML State** specifies the LUN status as either **Active** or **Init** (in-progress).
- **Owner Serial Number** indicates the chassis serial number.
- **Creator Blade ID** indicates the owner blade on which the data management LUN was created.
- **LUN VPG:ID** identifies the VP Group to which the LUN belongs.
- **Array Symbolic Name** indicates the symbolic node name for the array to which the LUN belongs.
- **WWULN** indicates the LUN's WWULN.

- **LUN State** indicates whether the LUN is online or offline.
- **Free/Total Metadata Extents** indicates the available and total resources on the data management LUN.
- **Free/Total Data Extents** indicates the available and total resources on the data management LUN.

Host Entities

A host entity is a logical construct consisting of zero or more initiator ports for one or more protocols. The host entity simplifies the configuration process and prevents configuration errors during LUN masking by:

- Representing a single server with one or many Fibre Channel, iSCSI, or FCoE ports.
- Representing one or many servers, each with one or many Fibre Channel, iSCSI, or FCoE ports. Servers are used in a cluster environment where the same LUNs must be presented to multiple servers and cluster hosts.
- Being available across the blades of a chassis.

Selecting the Host Entities branch on the router tree does not provide any information in the right pane. Select a specific host entity node in the router tree to view the *<Host_Name>* page in the right pane.

***<Host_Name>* Page**

The *<Host_Name>* page lists information for the selected host entity, as shown in [Figure 3-42](#).

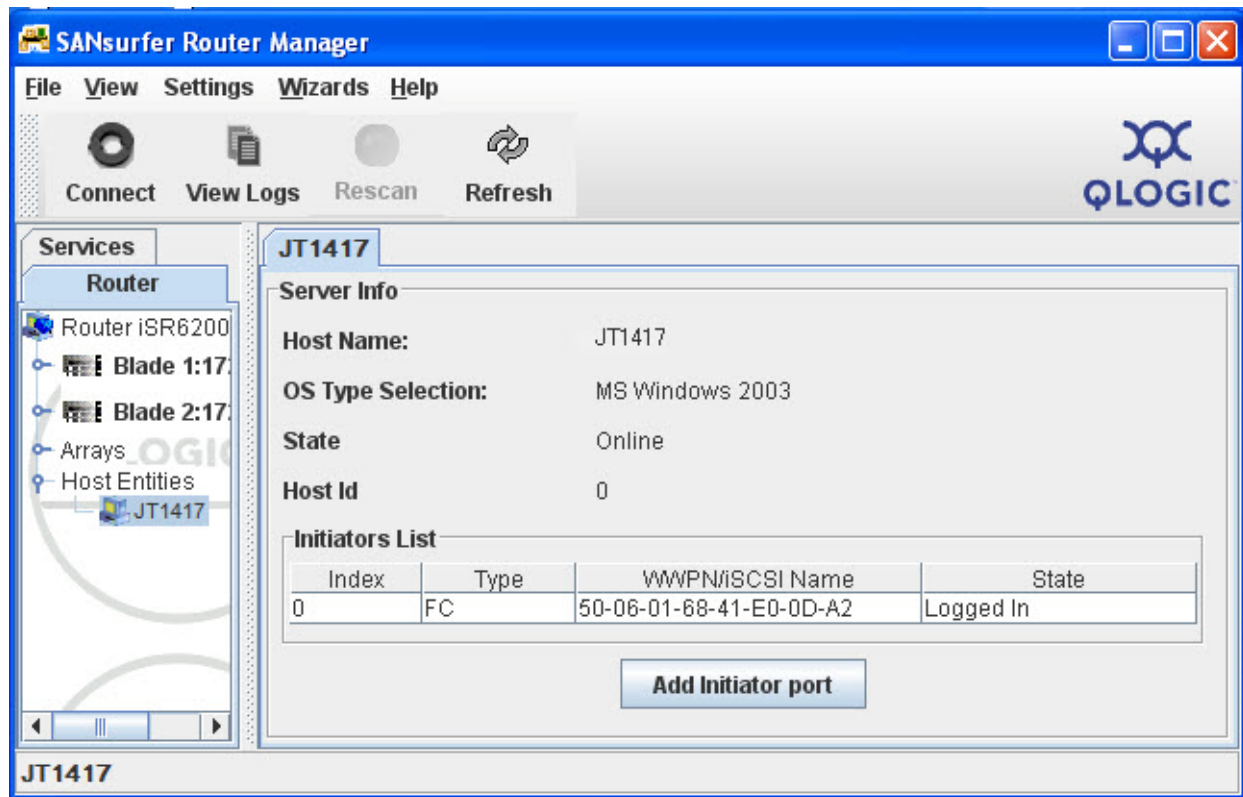


Figure 3-42. Host Entities: <Host_Name> Page

The following information is listed under **Server Info**:

- **Host Name** indicates the symbolic name of the host entity as defined by the user during host entity creation.
- **OS Type Selection** indicates the operating system of this host entity group of initiator ports.
- **State** indicates the status of the host entity as either **Online** (one or more initiator ports are logged in) or **Offline** (all initiator ports are logged out).
- **Host Id** indicates the index of the host entity.
- **Initiators List** shows the index number, type, name, and state of each initiator.
- **Add Initiator Port** opens a dialog box where you can add one or more iSCSI, Fibre Channel, or FCoE initiators to the list.

4

Viewing Service Information

SANsurfer Router Manager lets you monitor and manage licensed features such as data migration by selecting components on the Services page in the tree in the left pane (for details, see [“Services Tree” on page 2-15](#)). Information, configuration, and data for the selected component appears in the right pane.

The following sections describe these components:

- [“Blade” on page 4-2](#)
- [“Data Migration Jobs” on page 4-4](#)

Blade

When you select a blade node in the router tree's Services page, the [Data Migration Info](#) page appears in the right pane.

Data Migration Info

The Data Migration Info page shows data migration usage and licensing information, and provides options for data migration reporting and parameters, as shown in [Figure 4-1](#).

Data Migration Info

Chassis Serial Number: 3U7949K001

Data Migration Usage Information

DM Total Capacity Licensed:	205824.00 GB	DS Total Capacity Licensed:	10240.00 GB
DM Migration License Consumed:	14149.84 GB	DS License Consumed:	40.00 GB
DM Total Capacity In Process/Scheduled:	0.00 GB	DS Total Capacity In Process/Scheduled:	0.00 GB
DM Total Capacity Available:	191674.16 GB	DS Total Capacity Available:	10200.00 GB

Array Based Licenses Information

Migration Array based licenses issued:	1	Scrubbing Array based licenses issued:	0
Migration Array based licenses used:	0	Scrubbing Array based licenses used:	0
Migration Available array based licenses:	1	Scrubbing Available array based licenses:	0

☐ Data Migration Report

URL:

Migration Parameters

Local Migration Periodic Flush Interval (seconds):

Remote Migration Periodic Flush Interval (seconds):

Job Auto-failover Timer (seconds):

☐ Job Auto-failover Enable

Figure 4-1. Blade: Data Migration Info Page

This page contains the following information:

- **Chassis Serial Number** specifies the QLogic serial number of the iSR6200 router chassis.

- The **Data Migration Usage Information** section provides the amounts of capacity licensed, consumed, scheduled or in-process, and available.
- The **Array Based Licenses Information** section provides quantities of migration array-based licenses issued, used, and available.
- Select the **Data Migration Report** check box to specify settings for uploading, saving, or clearing information in the data migration report. For more information, refer to the *Data Migration Solution for iSR6200 User's Guide*.
 - ☐ In the **URL** box, type the URL where you want to save or upload the report.
 - ☐ Then click the buttons to specify the following options:
 - Click **Set URL** to save the event notification address (specified in the **URL** box) that indicates where you want to upload the report. If you do not click **Set URL**, the URL is not saved.
 - Click **Upload Report** to send the report to the Web page indicated in the **URL** box.
 - Click **Save Report** to create a report and save it in the router's `ftp` folder.
 - Click **Clear Report** to delete all reports from the router's `ftp` folder.
- The **Migration Parameters** section is visible only if the selected blade is licensed for data migration. It provides the following information:
 - ☐ **Local Migration Periodic Flush Interval (seconds)** indicates the number of seconds that the iSR6200 waits before starting to flush the DRL for online, local migration jobs. Valid values are 30 through 172800 (48 hours); the default is 30. QLogic recommends that you do not change the default value.
 - ☐ **Remote Migration Periodic Flush Interval (seconds)** indicates the number of seconds that the iSR6200 waits before starting to flush the DRL for online, remote migration jobs. Valid values are 900 through 172800 (48 hours); the default is 900. QLogic recommends that you do not change the default value.
 - ☐ **Job Auto-failover Timer (seconds)** indicates the number of seconds that the iSR6200 waits for the source or destination LUN to come up after the job owner blade is powered down or the source or destination LUN becomes unavailable on the owner blade. After this time is reached, the job is moved to the peer blade, where both the source and destination LUNs are available. Valid values are 600 through 172800 (48 hours); the default is 172800. QLogic recommends that you do not change the default value.

- ☐ Select the **Job Auto-failover Enable** check box to cause the job to automatically fail over to the peer blade if the source or destination LUN is unavailable on the owner blade. If auto failover is disabled, you must manually change the ownership of the job to the peer blade.
- ☐ If you make any changes to the **Migration Parameters**, click **Set** to save those changes.

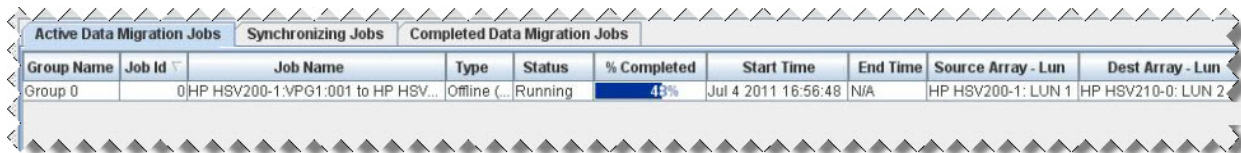
Data Migration Jobs

When you click a data migration job in the services tree, information for that job appears in the right pane. Details for data migration jobs are shown on the following pages:

- [“Active Data Migration Jobs” on page 4-4](#)
- [“Synchronizing Jobs” on page 4-5](#)
- [“Completed Data Migration Jobs” on page 4-5](#)

Active Data Migration Jobs

The Active Data Migration Jobs page provides data for the currently running data migration jobs, as shown in [Figure 4-2](#).



Active Data Migration Jobs									
Synchronizing Jobs									
Completed Data Migration Jobs									
Group Name	Job Id	Job Name	Type	Status	% Completed	Start Time	End Time	Source Array - Lun	Dest Array - Lun
Group 0	0	HP HSV200-1:VPG1:001 to HP HSV...	Offline (...)	Running	43%	Jul 4 2011 16:56:48	N/A	HP HSV200-1: LUN 1	HP HSV210-0: LUN 2

Figure 4-2. Data Migration Jobs: Active Data Migration Jobs Page

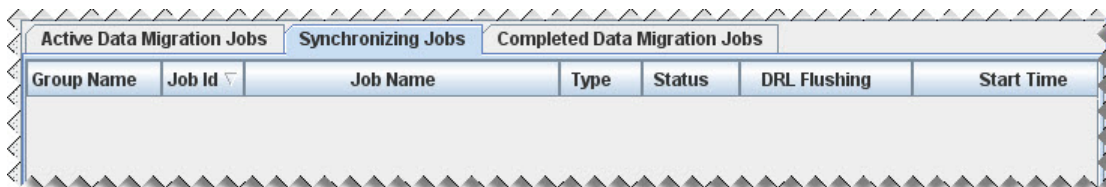
The Active Data Migration Jobs page contains the following information:

- **Group Name** shows the migration group name for which the migration, compare, or scrubbing job is scheduled.
- **Job ID** identifies by number the scheduled migration, compare, or scrubbing job.
- **Job Name** identifies by name the scheduled migration, compare, or scrubbing job.
- **Type** shows the job type, either **Offline**, **Migration**, **Compare**, or **Scrubbing**.
- **Status** shows the job state, either **Running**, **Paused**, **Stopped**, or **Failed**.
- **% Completed** shows the percent of the job that is finished.
- **Job ETC** indicates the expected time of job completion.

- **Start Time** indicates the date and time that the job began.
- **End Time** indicates the date and time that the job finished.
- **Source Array - LUN** indicates the name of the source array and LUN from which data is currently being migrated to the destination LUN.
- **Dest Array - LUN** indicates the name of the destination array and LUN to which data is currently being migrated from the source LUN.

Synchronizing Jobs

The Synchronizing Jobs page (see [Figure 4-3](#)) provides information about online data migration jobs that have completed the copying phase and are now under synchronization. Jobs are placed in a synchronized state pending acknowledgement of completed data migration. Synchronizing occurs until all of the dirty region logs (DRLs) associated with the job are flushed to the destination array.



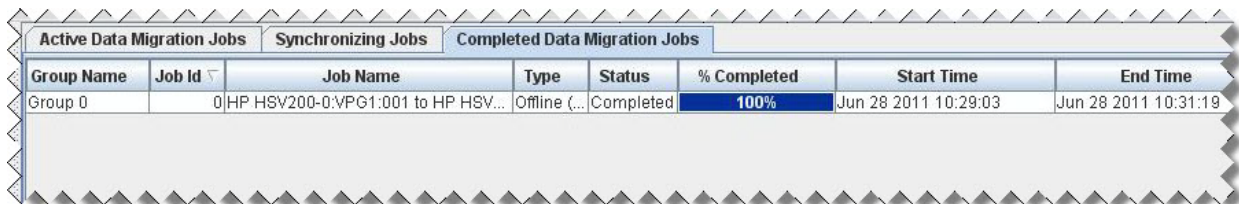
Group Name	Job Id	Job Name	Type	Status	DRL Flushing	Start Time

Figure 4-3. Data Migration Jobs: Synchronizing Jobs Page

The Synchronizing Jobs page contains the same information as the Active Data Migration Jobs page (see [“Active Data Migration Jobs” on page 4-4](#)), except that it contains the **DRL Flushing** column instead of the **% Completed** column.

Completed Data Migration Jobs

The Completed Data Migration Jobs page provides data for finished data migration jobs, as shown in [Figure 4-4](#).



Group Name	Job Id	Job Name	Type	Status	% Completed	Start Time	End Time
Group 0	0	HP HSV200-0:VPG1:001 to HP HSV...	Offline (...)	Completed	100%	Jun 28 2011 10:29:03	Jun 28 2011 10:31:19

Figure 4-4. Data Migration Jobs: Completed Data Migration Jobs Page

The Completed Data Migration Jobs page contains the following information:

- **Group Name** shows the migration group name for which the migration, compare, or scrubbing job was scheduled.

- **Job ID** identifies by number the completed migration, compare, or scrubbing job.
- **Job Name** identifies by name the completed migration, compare, or scrubbing job.
- **Type** shows the job type, either **Offline**, **Migration**, **Compare**, or **Scrubbing**.
- **Status** shows the job state, **Completed**.
- **% Completed** shows the job as 100% finished.
- **Start Time** indicates the date and time that the job began.
- **End Time** indicates the date and time that the job finished.
- **Source Array - LUN** indicates the name of the source array and LUN from which data was migrated to the destination LUN.
- **Dest Array - LUN** indicates the name of the destination array and LUN to which data was migrated from the source LUN.

Data Migration Job Details

Under the **Data Migration Jobs** node, click a **Group** node, and then a **Job ID** node, to view the details of a data migration job and, optionally, acknowledge the job or change its ownership. [Figure 4-5](#) shows an example.

Data Migration Job HP HSV340-1: LUN 88

Data Migration Job Information

Job Group	NewGroup
Job Name	HP HSV340-1:VPG1:088 to HP HSV340-1:VPG1:089
Job Owner	Blade 1
Job ID	0
Job UUID	0840E00002b166
Job Type	Offline (Local/Remote)
Job Priority	Not Applicable
Status	Completed
Migration State	100%
Verify Migration Data	No
Migration Performance	3 MBps
Migration Curr Performance	0 MBps
Job ETC	---
IO Size	64KB
Start Time	Oct 1 2012 17:09:11
End Time	Oct 1 2012 17:37:00
Delta Time	1669 seconds
Source Symbolic Name	HP HSV340-1
Source LUN ID	88
Source WWLUN	60-05-08-B4-00-0D-22-5C-00-03-40-00-0B-F0-00-00
Source Lun Serial	PAPCRA19SX902D
Source LUN Size	5.0 GB
Source LUN VPG	1
Destination Symbolic Name	HP HSV340-1
Destination LUN ID	89
Destination WWLUN	60-05-08-B4-00-0D-22-5C-00-03-40-00-0B-F4-00-00
Destination LUN Serial	PAPCRA19SX902D
Destination LUN Size	5.0 GB
Destination LUN VPG	1
Destination LUN	Not Thin Provisioned
Validate Dest LUN	No

Change Ownership
Acknowledge

HP HSV340-1:VPG1:089

Figure 4-5. Data Migration Job Details

A Simple Network Management Protocol

Simple network management protocol (SNMP) provides monitoring and trap functions for managing the router through third-party applications that support SNMP. The router firmware supports SNMP versions 1 and 2 and a QLogic management information base (MIB) (see [page A-3](#)). You may format traps using SNMP version 1 or 2.

This appendix provides the following SNMP information for the iSR6200:

- [“SNMP Parameters” on page A-2](#)
- [“SNMP Trap Configuration” on page A-3](#)
- [“Management Information Base \(MIB\)” on page A-3](#)
- [“Notifications” on page A-18](#)

SNMP Parameters

You can set the SNMP properties using SANsurfer Router Manager or the command line interface (CLI).

Table A-1 describes the SNMP parameters.

Table A-1. SNMP Parameters

Parameter	Description
Read community	A password that authorizes an SNMP management server to read information from the router. This is a write-only field. The value on the router and the SNMP management server must be the same. The read community password can be up to 32 characters, excluding the number sign (#), semicolon (;), and comma (,). The default password is <i>private</i> .
Trap community	A password that authorizes an SNMP management server to receive traps. This is a write-only field. The value on the router and the SNMP management server must be the same. The trap community password can be up to 32 characters, excluding the number sign (#), semicolon (;), and comma (,). The default password is <i>private</i> .
System location	Specifies the name of the router location. The name can be up to 64 characters, excluding the number sign (#), semicolon (;), and comma (,). The default is undefined.
System contact	Specifies the name of the person to be contacted to respond to trap events. The name can be up to 64 characters, excluding the number sign (#), semicolon (;), and comma (,). The default is undefined.
Authentication traps	Enables or disables the generation of traps in response to authentication failures. The default is <i>disabled</i> .

SNMP Trap Configuration

SNMP trap configuration lets you set up to eight trap destinations. Choose from Trap 1–Trap 8 to configure each trap. [Table A-2](#) describes the parameters for configuring an SNMP trap.

Table A-2. SNMP Trap Configuration Parameters

Parameter	Description
Trap <i>n</i> enabled	Enables or disables trap <i>n</i> . If disabled, the trap is not configured.
Trap address ^a	Specifies the IP address to which the SNMP traps are sent. A maximum of eight trap addresses are supported. The default address for traps is 0.0.0.0.
Trap port ^a	Port number on which the trap is sent. The default is 162. If the trap destination is not enabled, this value is 0 (zero). Most SNMP managers and management software listen on this port for SNMP traps.
Trap version	Specifies the SNMP version (1 or 2) with which to format traps.

^a Trap address (other than 0.0.0.0) and trap port combinations must be unique. For example, if trap 1 and trap 2 have the same address, they must have different port values. Similarly, if trap 1 and trap 2 have the same port value, they must have different addresses.

Management Information Base (MIB)

This section describes the QLogic management information base (MIB). The MIB includes the following tables:

- “Network Port Table” on page A-3
- “FC Port Table” on page A-6
- “Initiator Object Table” on page A-9
- “LUN Table” on page A-11
- “VP Group Table” on page A-13
- “Sensor Table” on page A-15

Network Port Table

The network port table contains a list of network ports that are operational on the router. The entries in this table include the management port (labeled MGMT), and the gigabit Ethernet ports (labeled GE1 and GE2). For details, see the *iSR6200 QLogic intelligent Storage Router (iSR) Installation Guide*.

qsrNwPortTable

Syntax	SEQUENCE OF QsrNwPortEntry
Access	Not accessible
Description	Entries in this table include the management port and the iSCSI ports on the router.

qsrNwPortEntry

Syntax	QsrNwPortEntry
Access	Not accessible
Description	Each entry (row) contains information about a specific network port.

A network port entry includes the following sequence of objects:

qsrNwPortRole	QsrPortRole
qsrNwPortIndex	unsigned32
qsrNwPortAddressMode	INTEGER
qsrIPAddressType	InetAddressType
qsrIPAddress	InetAddress
qsrNetMask	InetAddress
qsrGateway	InetAddress
qsrMacAddress	MacAddress
qsrNwLinkStatus	QsrLinkStatus
qsrNwLinkRate	QsrLinkRate

qsrNwPortRole

Syntax	QsrPortRole
Access	Not accessible
Description	Operational role of this port: management port or iSCSI port.

qsrNwPortIndex

Syntax	Unsigned32
Access	Not accessible
Description	A positive integer indexing each network port in a specified role.

qsrNwPortAddressMode

Syntax	INTEGER 1 = Static 2 = DHCP 3 = Bootp 4 = RARP
Access	Read-only
Description	Method by which the port gets its IP address.

qsrIPAddressType

Syntax	InetAddressType
Access	Read-only
Description	IP address type: ipv4 or ipv6.

qsrIPAddress

Syntax	InetAddress
Access	Read-only
Description	IP address of the port.

qsrNetMask

Syntax	InetAddress
Access	Read-only
Description	Subnet mask for this port.

qsrGateway

Syntax	<code>InetAddress</code>
Access	Read-only
Description	Gateway for this port.

qsrMacAddress

Syntax	<code>IMacAddress</code>
Access	Read-only
Description	MAC address for this port.

qstNwLinkStatus

Syntax	<code>QsrLinkStatus</code>
Access	Read-only
Description	Operational link status for this port.

qsrNwLinkRate

Syntax	<code>QsrLinkRate</code>
Access	Read-only
Description	Operational link rate for this port.

FC Port Table

This table contains a list of the Fibre Channel (FC) ports on the router. There are as many entries in this table as there are Fibre Channel ports on the router.

qsrFcPortTable

Syntax	<code>SEQUENCE OF QsrFcPortEntry</code>
Access	Not accessible
Description	A list of the Fibre Channel ports on the router. The table contains as many entries as there are Fibre Channel ports on the router.

qsrFcPortEntry

Syntax	QsrFcPortEntry
Access	Not accessible
Description	Each entry (row) contains information about a specific Fibre Channel port.

A Fibre Channel port entry consists of the following sequence of objects

qsrFcPortRole	QsrPortRole
qsrFcPortIndex	Unsigned32
qsrFcPortNodeWwn	PhysAddress
qsrFcPortWwn	PhysAddress
qsrFcPortId	PhysAddress
qsrFcPortType	Unsigned32
qsrFcLinkStatus	QsrLinkStatus
qsrFcLinkRate	QsrLinkRate

qsrFcPortRole

Syntax	QsrPortRole
Access	Not accessible
Description	Operational role of this port: FCP mode or frame shuttle mode.

qsrFcPortIndex

Syntax	Unsigned32
Access	Not accessible
Description	A positive integer indexing each Fibre Channel port in a specified role.

qsrFcPortNodeWwn

Syntax	PhysAddress
Access	Read-only
Description	World wide name of the node that contains this port.

qsrFcPortWwn

Syntax `PhysAddress`

Access Read-only

Description World wide name for this port.

qsrFcPortId

Syntax `PhysAddress`

Access Read-only

Description Interface's 24-bit Fibre Channel address identifier.

qsrFcPortType

Syntax `Unsigned32`

Access Read-only

Description Type of Fibre Channel port, as indicated by the use of the appropriate value assigned by the Internet Assigned Numbers Authority (IANA). The IANA-maintained registry for Fibre Channel port types is located here:

www.iana.org/assignments/fc-port-types

qsrFcLinkStatus

Syntax `QsrLinkStatus`

Access Read-only

Description Current link status for this port.

qsrFcLinkRate

Syntax `QsrLinkRate`

Access Read-only

Description Current link rate for this port.

Initiator Object Table

The initiator object table is a list of the iSCSI initiators that have been discovered by the router. There are as many entries in this table as there are iSCSI initiators on the router.

qsrlsInitTable

Syntax	SEQUENCE OF QsrIsInitEntry
Access	Not accessible
Description	Entries in this table contain information about initiators.

qsrlsInitEntry

Syntax	QsrIsInitEntry
Access	Not accessible
Description	Each entry (row) contains information about a specific iSCSI initiator.

iSCSI initiator information entry consists of the following sequence of objects:

```

qsrlsInitIndex      Unsigned32,
qsrlsInitName       SnmpAdminString,
qsrlsInitAlias       SnmpAdminString,
qsrlsInitAddressType InetAddressType,
qsrlsInitAddress     InetAddress,
qsrlsInitStatus      INTEGER,
qsrlsInitOsType      SnmpAdminString,
qsrlsInitChapEnabled INTEGER

```

qsrlsInitIndex

Syntax	Unsigned32
Access	Not accessible
Description	An arbitrary positive integer denoting each iSCSI initiator discovered by the router.

qsrlsInitName OBJECT-TYPE

Syntax `SnmpAdminString`

Access Not accessible

Description iSCSI name of the initiator.

qsrlsInitAlias OBJECT-TYPE

Syntax `SnmpAdminString`

Access Read-only

Description Alias for the iSCSI initiator.

qsrlsInitAddressType

Syntax `InetAddressType`

Access Read-only

Description Type of iSCSI initiator's IP address (IPv4 or IPv6).

qsrlsInitAddress

Syntax `InetAddress`

Access Read-only

Description IP address of the iSCSI initiator.

qsrlsInitStatus

Syntax `Integer:`
 1 = unknown,
 2 = loggedIn,
 3 = loggedOut,
 4 = recovery

Access Read-only

Description Status of the iSCSI initiator, that is, whether or not it is
 logged in to the router.

qsrlsInitOsType

Syntax `SnmpAdminString`

Access Read-only

Description The type of the iSCSI initiator's operating system.

qsrlsInitChapEnabled

Syntax `Integer: 0 = enabled; 2 = disabled`

Access Read-only

Description A value indicating whether CHAP is enabled or not for this iSCSI initiator.

LUN Table

These tables contains information about the logical unit number (LUN) list.

qsrLunTable

Syntax `SEQUENCE OF QsrLunEntry`

Access Not accessible

Description A list of the LUNs on the Fibre Channel targets discovered by the router. This table contains as many entries as there are Fibre Channel targets on the router.

qsrLunEntry

Syntax `QsrLunEntry`

Access Not accessible

Description Each entry (row) contains information about a specific LUN. This table extends `scsiDscLunTable` in `QLOGIC-SCSI-MIB`. The entries in this table show other attributes of the LUN.

The `QsrLunEntry` contains the following sequences of objects.

<code>qsrLunWwuln</code>	<code>PhysAddress</code> ,
<code>qsrLunVendorId</code>	<code>SnmpAdminString</code> ,
<code>qsrLunProductId</code>	<code>SnmpAdminString</code> ,
<code>qsrLunProdRevLevel</code>	<code>SnmpAdminString</code> ,
<code>qsrLunSize</code>	<code>Unsigned32</code> ,
<code>qsrLunState</code>	<code>INTEGER</code> ,
<code>qsrLunVPGroupId</code>	<code>INTEGER</code> ,
<code>qsrLunVPGroupName</code>	<code>SnmpAdminString</code>

qsrLunWwuln

Syntax `PhysAddress`

Access Read-only

Description The world wide unique LUN name (WWULN) for the LUN.

qsrLunVendorId

Syntax `SnmpAdminString`

Access Read-only

Description Vendor ID for the LUN.

qsrLunProductId

Syntax `SnmpAdminString`

Access Read-only

Description Product ID for the LUN.

qsrLunProdRevLevel

Syntax `SnmpAdminString`

Access Read-only

Description Product revision level for the LUN.

qsrLunSize OBJECT-TYPE

Syntax	Unsigned32
Units	Megabytes
Access	Read-only
Description	Size of the LUN (in megabytes).

qsrLunState

Syntax	Integer 1 = online, 2 = offline, 3 = reserved
Access	Read-only
Description	State of the LUN (online or offline).

qsrLunVPGroupid

Syntax	Integer
Access	Read-only
Description	ID of the VP group to which this LUN belongs.

qsrLunVPGroupname OBJECT-TYPE

Syntax	SnmpAdminString
Access	Read-only
Description	VP group name to which this LUN belongs.

VP Group Table

This table contains a list of virtual port groups (VPGs). There are four entries in this table at any point of time.

qsrVPGGroupTable

Syntax	SEQUENCE OF QsrVPGGroupEntry
Access	Not accessible
Description	Table for the VP group.

qsrVPGroupEntry OBJECT-TYPE

Syntax QsrVPGroupEntry

Access Not accessible

Description Each entry in the VP group table.

Index { qsrVPGroupIndex }
 ::= { qsrVPGroupTable 1 }

The **QsrVPGroupEntry** contains the following sequence of objects:

qsrVPGroupIndex	Unsigned32,
qsrVPGroupId	INTEGER,
qsrVPGroupName	SnmpAdminString,
qsrVPGroupWWNN	VpGroupWwnnAndWwpn,
qsrVPGroupWWPN	VpGroupWwnnAndWwpn,
qsrVPGroupStatus	INTEGER

qsrVPGroupIndex OBJECT-TYPE

Syntax Unsigned32

Access Read-only

Description VP group index.

qsrVPGroupId OBJECT-TYPE

Syntax Integer

Access Read-only

Description VP group ID.

qsrVPGroupName

Syntax SnmpAdminString

Access Read-only

Description VP group name or host group name.

qsrVPGroupWWNN

Syntax `VpGroupWwnnAndWwpn`

Access Read-only

Description WWNN for VP group.

qsrVPGroupWWPN OBJECT-TYPE

Syntax `VpGroupWwnnAndWwpn`

Access Read-only

Description World wide port number (WWPN).

qsrVPGroupStatus OBJECT-TYPE

Syntax `Integer: 0 = enabled; 1 = disabled`

Max-Access Read-only

Description Maintain the status of the VP group (enabled or disabled)

Sensor Table

The sensor table lists all the sensors on the router. Each table row specifies a single sensor.

qsrSensorTable

Syntax `SEQUENCE OF QsrSensorEntry`

Access Not accessible

Description List of all the sensors on the router. The table contains as many entries (rows) as there are sensors.

qsrSensorEntry

Syntax `QsrSensorEntry`

Access Not accessible

Description Each entry (row) corresponds to a single sensor.

A sensor entry contains the following sequence of objects:

qsrSensorType	INTEGER
qsrSensorIndex	Unsigned32
qsrSensorUnits	INTEGER
qsrSensorValue	Integer32
qsrUpperThreshold	Integer32
qsrLowerThreshold	Integer32
qsrSensorState	INTEGER

qsrSensorType

Syntax INTEGER
 Temperature = 1

Access Not accessible

Description Type of data being measured by this sensor.

qsrSensorIndex

Syntax Unsigned32

Access Not accessible

Description A positive integer identifying each sensor of a specified type.

qsrSensorUnits

Syntax INTEGER
 Celsius = 1

Access Read-only

Description Unit of measurement for the sensor.

qsrSensorValue

Syntax `Integer32`

Access Read-only

Description Current value of the sensor.

qsrUpperThreshold

Syntax `Integer32`

Access Read-only

Description Upper-level threshold for this sensor.

qsrLowerThreshold

Syntax `Integer32`

Access Read-only

Description Lower-level threshold for this sensor.

qsrSensorState

Syntax `INTEGER`

Access Read-only

Description State of this sensor, indicating the health of the system:
Unknown = The sensor value or thresholds cannot be determined.
Normal = The sensor value is within normal limits.
Warning = The sensor value is approaching a threshold.
Critical = The sensor value has crossed a threshold.

Notifications

The router provides the following notification types described in this section:

- [“System Information Objects” on page A-18](#)
- [“Notification Objects” on page A-19](#)
- [“Agent Startup Notification” on page A-20](#)
- [“Agent Shutdown Notification” on page A-20](#)
- [“Network Port Down Notification” on page A-20](#)
- [“FC Port Down Notification” on page A-21](#)
- [“Target Device Discovery” on page A-21](#)
- [“Target Presentation \(Mapping\)” on page A-21](#)
- [“VP Group Notification” on page A-22](#)
- [“Sensor Notification” on page A-22](#)
- [“Generic Notification” on page A-23](#)
- [“FCIP Route Notification” on page A-24](#)

NOTE

Every notification uses `qsrBladeSlot` as one of the objects. This determines the originator blade for the same notification.

System Information Objects

The system information objects provide the system serial number, version numbers (hardware, software, and agent), and number of ports (Fibre Channel and GbE).

qsrSerialNumber

Syntax `SnmpAdminString`

Access Read-only

Description System serial number.

qsrHwVersion

Syntax `SnmpAdminString`

Access Read-only

Description System hardware version number.

qsrSwVersion

Syntax `SnmpAdminString`

Access Read-only

Description System software (firmware) version number.

qsrNoOfFcPorts

Syntax `Unsigned32`

Access Read-only

Description Quantity of Fibre Channel ports on the system.

qsrNoOfGbEPorts

Syntax `Unsigned32`

Access Read-only

Description Quantity of gigabit Ethernet (GbE) ports on the system.

qsrAgentVersion

Syntax `SnmpAdminString`

Access Read-only

Description Version number of the agent software on the system.

Notification Objects

This section defines the objects used in notifications.

qsrEventSeverity

Syntax `INTEGER`

Access Accessible for notify

Description Indicates the severity of the event. The value *clear* specifies that a condition that caused an earlier trap is no longer present.

qsrEventDescription

Syntax `SnmpAdminString`

Access Accessible for notify

Description A textual description of the event that occurred.

qsrEventTimeStamp

Syntax `DateAndTime`

Access Accessible for notify

Description Indicates when the event occurred.

Agent Startup Notification

The agent startup notification indicates that the agent on the router has started running.

qsrAgentStartup uses the following object:

- `qsrEventTimeStamp`

Agent Shutdown Notification

The agent shutdown notification indicates that the agent on the router is shutting down.

qsrAgentShutdown uses the following object:

- `qsrEventTimeStamp`

Network Port Down Notification

The network port down notification indicates that the specified network port is **down**. The next time the port comes up, this event is sent with the `qsrEventSeverity` object set to **clear**.

qsrNwPortDown uses the following objects:

- `qsrNwLinkStatus`
- `qsrEventTimeStamp`
- `qsrEventSeverity`

Network notifications are sent for the following events:

- Management port: down or up
- iSCSI port: down or up
- Port number (1–4)

FC Port Down Notification

The FC port down notification indicates that the specified Fibre Channel port is down. The next time the port comes up, this event is sent with the `qsrEventSeverity` object set to `clear`.

qsrFcPortDown uses the following objects:

- `qsrFcLinkStatus`
- `qsrEventTimeStamp`
- `qsrEventSeverity`

Fibre Channel notifications are sent for the following events:

- Fibre Channel port: down or up
- Port number (1–4)

Target Device Discovery

The Fibre Channel target device discovery notification indicates that the specified Fibre Channel target is online or offline.

qsrDscTgtStatusChanged uses the following objects:

- `qsrBladeSlot`
- `qsrEventTimeStamp`
- `qsrFcTgtState`
- `qsrEventSeverity`

Fibre Channel target device discovery notifications are sent for the following event:

- Fibre Channel Target
 - ☐ State: Discovered, went offline, or went online
 - ☐ Target WWPN
 - ☐ Blade number (1 or 2)

Target Presentation (Mapping)

The target presentation notification indicates that the specified target has been presented (mapped) or unpresented (unmapped).

qsrPresTgtMapped uses the following objects:

- `qsrBladeSlot`
- `qsrEventTimeStamp`
- `qsrPresTgtMapped`
- `qsrPresTgtUnmapped`
- `qsrEventSeverity`

Target presentation notifications are sent for the following event:

- Target Presentation
 - ☐ State: Presented (mapped) or unpresented (unmapped)
 - ☐ Target name
 - ☐ Blade number (1 or 2)

VP Group Notification

The VP group notification indicates that the specified VP group is enabled or disabled. It also represents change in the name of the VP group.

qsrVPGroupStatusChanged uses the following objects:

- `qsrBladeSlot`
- `qsrVPGroupIndex`
- `qsrVPGroupStatus`
- `qsrEventTimeStamp`
- `qsrEventSeverity`

VP group notifications are sent for the following events:

- Change in name of a VP group
- Enabling and disabling a VP group

Sensor Notification

The sensor notification indicates that the state for the specified sensor is not `normal`. When the sensor returns to the normal state, this event is sent with the `qsrEventSeverity` object set to `clear`.

qsrSensorNotification uses the following objects:

- `qsrSensorValue`
- `qsrSensorState`
- `qsrEventTimeStamp`
- `qsrEventSeverity`

Sensor notifications are sent for the following events:

- Over Temperature
 - ☐ Blade number (1 or 2)
 - ☐ Sensor number (1 of 3)
- Temperature returned to normal
 - ☐ Blade number (1 or 2)
 - ☐ Sensor number (1 of 3)

- Fans at high speed
 - ☐ PCM number (1 or 2)
- Fans returned to normal speed
 - ☐ PCM number (1 or 2)
- Power Cooling Module (PCM) installed
 - ☐ PCM number (1 or 2)
- PCM removed
 - ☐ PCM number (1 or 2)
- PCM powered (AC power connected)
 - ☐ PCM number (1 or 2)
- PCM un-powered (AC power removed)
 - ☐ PCM number (1 or 2)
- Fan failed
 - ☐ PCM number (1 or 2)
 - ☐ Fan number (1 of 3)
- Fan returned to operational state
 - ☐ PCM number (1 or 2)
 - ☐ Fan number (1 of 3)

Generic Notification

The generic notification reports events other than the defined event types. It provides a description object that identifies the event in clear text.

qsrGenericEvent uses the following objects:

- `qsrEventTimeStamp`
- `qsrEventSeverity`
- `qsrEventDescription`

Generic notifications are sent for the following events:

- Fibre Channel port configuration change
 - ☐ Blade number (1 or 2)
 - ☐ Port number (1 of 4)

- iSCSI port configuration change
 - ☐ Blade number (1 or 2)
 - ☐ Port number (1 of 4)
- iSNS configuration change
 - ☐ Blade number (1 or 2)
- NTP configuration change
 - ☐ Blade number (1 or 2)
- Router configuration change
 - ☐ Blade number (1 or 2)
- Management port configuration change
 - ☐ Blade number (1 or 2)
- Firmware upgrade complete
 - ☐ Blade number (1 or 2)
- Reboot blade
 - ☐ Blade number (1 or 2)

FCIP Route Notification

FCIP route notification indicates whether the route has been added, removed, or modified. It is a user-action driven trap.

qsrFCIPRouteNotification uses the following objects:

- `qsrFcipRouteIndex`
- `qsrFCIPRouteAction`
- `qsrEventTimeStamp`
- `qsrEventSeverity`
- `qsrBladeSlot`

FCIP Link Up and Link Down are notified with a generic notification that contains a user-level string, either `FcipRoute#%d: FCIP Link Up` or `FcipRoute#%d: FCIP Link Down`.

B Log Messages

This appendix provides details about messages logged to a file. The message log is persistent because it is maintained across router power cycles and reboots.

Information in [Table B-1](#) is organized as follows:

- The **ID** column specifies the message identification numbers in ascending order.
- The **Log Message** column indicates the message text shown in the CLI or SANsurfer Router Manager router log. Note that:
 - ❑ Log messages for the iSCSI driver module are common to both iSCSI ports. Log messages beginning with #0 denote iSCSI port 1 (GE1) and log messages beginning with #1 denote iSCSI port 2 (GE2).
 - ❑ Log messages for the Fibre Channel driver module are common to both Fibre Channel ports. Log messages beginning with #0 denote Fibre Channel port 1 (FC1), and log messages beginning with #1 denote Fibre Channel port 2 (FC2).
 - ❑ Log messages for the FCIP module are common to both FCIP routes. Log messages beginning with #0 denote FCIP route 1, and log messages beginning with #1 denote FCIP route 2.
- The **Module Type** column specifies the message reporting module, where:
 - ❑ **App** = Application module
 - ❑ **FC** = Fibre Channel driver
 - ❑ **FCIP** = FCIP driver
 - ❑ **iSCSI** = iSCSI driver

- ☐ **NIC** = FCIP NIC module
- ☐ **System** = System module
- ☐ **User** = User module
- The **Msg. Type** column specifies the log message type, where:
 - ☐ **Error** = Error log message
 - ☐ **Fatal** = Fatal log message
 - ☐ **Info** = Informational log message
- The **Description** column provides additional information about the log message.

Table B-1. iSR6200 Router Log Messages

ID	Log Message	Module Type	Msg. Type	Description
40967	QLBA_NullDoorbell: driver unloaded, port disabled	App	Error	NULL doorbell routine for unloaded drivers. When a driver is unloaded, the doorbell routine is redirected to this NULL routine.
40996	QLBA_ProcessTrb: Processing unsupported ordered tag command	App	Error	Processing unsupported ordered tag task management command.
41004	QLBA_ProcessTrb: Processing unsupported head of queue tag command	App	Error	Processing unsupported head-of-queue task management command.
41058	QLBA_CreateTargetDeviceObject: Too many devices	App	Error	Unable to create an object for the target device; exceeded the maximum number of target devices.
41060	QLBA_CreateTargetNodeObject: Too many devices	App	Error	Unable to create an object for the target node; exceeded the maximum number of target devices.
41067	QLBA_CreateLunObject: LunObject memory unavailable	App	Error	Memory unavailable for LUN object.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
41077	QLBA_CreateInitiatorObject: Too many initiators	App	Error	Unable to create an object for initiator object; exceeded the maximum number of initiators.
41096	QLBA_DisplayTargetOperationStatus: PCI Error, Status 0x%.2x	App	Error	Process control block status indicates that a PCI error occurred during a target operation.
41106	QLBA_DisplayInitiatorOperationStatus: DMA Error, Status 0x%.2x	App	Error	Process control block status indicates that a DMA error occurred during an initiator operation.
41107	QLBA_DisplayInitiatorOperationStatus: Transport Error, Status 0x%.2x	App	Error	Process control block status indicates that a transport error (protocol) occurred during an initiator operation.
41111	QLBA_DisplayInitiatorOperationStatus: Data Overrun, Status 0x%.2x	App	Error	Process control block status indicates that a data overrun error occurred during an initiator operation.
41234	QLIS_LoginPduContinue: Operation failed. Initiator 0x%x, TPB status 0x%x	App	Error	iSCSI login failed between receipt of protocol data unit (PDU) and request for the data segment.
41238	QLKV_ValidateLoginTransitCsgNsgVersion failed (status 0x%x)	App	Error	iSCSI login failed due to unsupported version number in the received login PDU.
41257	QLIS_LoginPduContinue: Invalid initiator name. Initiator:	App	Error	iSCSI Login PDU contains invalid initiator name. The format and character set used to form the initiator name is invalid.
41265	QLIS_LoginPduContinue: Target not configured for Portal	App	Error	iSCSI target login was attempted to a portal (iSCSI1 or iSCSI2) on which the target is not presented.
41267	QLIS_LoginPduContinue: Target not found. Target name:	App	Error	iSCSI Login PDU received for a target with a target name unknown to the router.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
41268	QLIS_LoginPduContinue: Missing target name	App	Error	iSCSI Login PDU received without a target name for a normal session.
41270	QLIS_LoginPduContinue: TSIH is 0 but InitiatorName key/value not provided	App	Error	iSCSI Login PDU received without an initiator name key/value.
41272	QLIS_LoginPduContinue: CONN_STATE_IN_LOGIN, Unknown InitTaskTag	App	Error	iSCSI Login PDU received with an incorrect initiator task tag for a session that is partially logged in. This error occurs if a login PDU other than the initial login PDU used an initiator task tag that was different from the initiator task tag provided in the initial login PDU.
41283	QLIS_LoginPduContinue: TSIH 0x%x out of range	App	Error	iSCSI Login PDU was received with a target session identifying handle (TSIH) out of range. This error occurs if the iSCSI initiator attempting the login failed to use the TSIH value provided in the Target Login Response PDU (router is target) in subsequent login PDUs.
41284	QLIS_LoginPduContinue: Session does not exist, invalid TSIH 0x%x	App	Error	iSCSI Login PDU was received with an invalid TSIH value. The TSIH is invalid because there is no session with that TSIH value. This would occur if the iSCSI initiator attempting the login failed to use the TSIH value provided in the target login response PDU (router is target) in subsequent login PDUs.
41353	QLIS_LoginPduContinue: Session does not exist, invalid TSIH 0x%x	App	Error	iSCSI Login PDU rejected due to a CHAP authentication error.
41354	QLIS_LoginPduContinue: Unexpected CHAP key detected	App	Error	iSCSI Login PDU rejected due to a CHAP key error.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
41508	QLBI_SetPortInfo: QLUT_AllocatePortalObject failed (Port-Type 0x%x, PortId 0x%x)	App	Error	Failed to allocate an object for <i>Set Port Info</i> IOCTL processing: PortType: 0 = Fibre Channel, 1 = iSCSI PortId: 0 = FC1 or iSCSI1(GE1), 1 = FC2 or iSCSI2 (GE2)
41626	QLBI_GetLunInfo: INQUIRY failed, TPB status 0x%x	App	Error	Inquiry command failed. The Inquiry command was issued by the router as part of its discovery process.
41629	QLBI_GetLunInfo: INQUIRY failed, TPB status 0x%x	App	Error	Pass-Through command for Inquiry command for page 83 failed. The Inquiry command was issued by the router as part of its discovery process.
41635	QLBI_Passthru: Invalid data length %d bytes	App	Error	Pass-Through command for Read Capacity command failed. The Read Capacity command was issued by the router as part of its discovery process.
41636	QLBI_GetLunInfo: INQUIRY failed, TPB status 0x%x	App	Error	Read Capacity command failed. The Read Capacity command was issued by the router as part of its discovery process.
41696	QLBI_GetLunInfo: INQUIRY failed, TPB status 0x%x	App	Error	Pass-Through command issued by management tool (such as GUI) was aborted.
41700	QLBI_Passthru: Invalid CDB length %d bytes	App	Error	Pass-Through command issued by management tool (such as GUI) failed due to invalid command descriptor block (CDB) length.
41701	QLBI_Passthru: Invalid data length %d bytes	App	Error	Pass-Through command issued by management tool (such as GUI) failed due to invalid data length.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
41717	QLBI_Passthru: Invalid data length %d bytes	App	Error	Pass-Through command issued by management tool (such as GUI) was interrupted or timed out.
41750	QLBI_Ioctl: ERROR: Operation (0x%x) not supported in this mode	App	Error	IOCTL operation unsupported. Operation code provided in log message.
41768	QLBI_GetLunList: REPORT LUNS command failed	App	Error	Report LUNs command failed. The Report LUNs command was issued by the router as part of its discovery process.
41769	QLBI_GetLunList: REPORT LUNS command failed with CHECK CONDITION, SCSI STATUS 0x%02X	App	Error	Report LUNs command failed with check condition status. The Report LUNs command was issued by the router as part of its discovery process.
41771	QLBI_GetLunList: Lun allocation failed for LunId %d	App	Error	Failed to allocate LUN object; out of resources.
41994	QLFC_Login: VpIndex (%d) out of range	App	Error	Login attempted using Fibre Channel virtual port (VP) index that is out-of-range (range = 0–31). Index reported in log message.
41995	QLFC_Login: VP Index 0x%x not configured	App	Error	Login attempted using Fibre Channel VP index that has not been configured. Operation attempted on an unconfigured VP.
42002	QLFC_Login: Can't open connection	App	Error	Attempting login but Fibre Channel connection cannot be opened.
42024	QLFC_Logout: No active path to device. WWPN: %.2X%.2X%.2X%.2X%.2X%.2X%.2X%.2X	App	Error	Attempting logout of device for which there is no active path (WWPN not found).

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
42027	QLFC_Logout: VP Index 0x%x not configured	App	Error	Logout attempted using Fibre Channel VP index that has not been configured. Operation attempted on an unconfigured VP.
42068	QLFC_HandleTeb: System Error	App	Error	Event notification; Fibre Channel processor encountered a system error (unrecoverable firmware error).
42069	QLFC_HandleTeb: Driver Fatal Error	App	Error	Event notification; Fibre Channel driver encountered a fatal error.
42072	QLFC_HandleTeb: Driver Fatal Error	App	Error	Event notification; Fibre Channel port logged out.
42242	QLIS_AllocateSessionObject: Out of session resources	App	Error	Failed to allocate object for iSCSI session; out of session resources.
42252	QLIS_EnqueueiScsiPdu: Duplicate PDU, CmdSN %d (0x%x), dropping it	App	Error	Received iSCSI PDU with duplicate command sequence number (CmdSN). Command PDU will be dropped.
42258	QLIS_InstantiateSession: Can't add Initiator to the database	App	Error	Unable to allocate iSCSI initiator object while instantiating session.
42259	QLIS_InstantiateSession: Maximum number (%d) of allowed hosts already logged in	App	Error	iSCSI session login rejected because the maximum number of allowed hosts are already logged in.
42404	QLIS_InstantiateSession: Maximum number (%d) of allowed hosts already logged in	App	Error	Failed to execute iSCSI Command PDU because its CmdSN is out-of-range. Log message contains the incorrect CmdSN, the valid CmdSN range, the first byte of the CDB, and the data length.
42648	QLIS_HandleTeb: Driver Fatal Error	App	Error	Event notification; iSCSI driver encountered a fatal error.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
42649	QLIS_HandleTeb: Unload Driver	App	Error	Event notification; an IOCTL request was received to unload the iSCSI driver.
42654	QLIS_HandleTeb: iSNS Connection Failed	App	Error	Event notification; attempt to connect to the iSNS server failed.
43265	QLUT_AllocateTpbExtension: TPB allocation failed	App	Error	Failed to allocate memory for TPB extension.
43267	QLUT_AllocateTpbExtension: Alloc of DSD failed for buffer len %d	App	Error	Failed to allocate data segment descriptor (DSD) (buffer length %d).
43268	QLUT_AllocateTpbExtension: Data buffer allocation failed (length %d)	App	Error	Failed to allocate data buffer (length %d).
44549	QLDM_HandleMigError: Migration Job %d stopped for Src Lun %hd Dest Lun %hd Error %x AdditionalErrorStatus %x at line %d	App	Error	An error occurred on an I/O that was issued for a migration job. The message provides the job ID, source, and destination LUN IDs, as well as the error.
53254	System Booting Up.	App	Info	Router is booting up.
53357	QLBA_ProcessTpb: De-compression failed. Disabling compression temporarily	App	Info	Decompression failed. Disabling compression temporarily.
53584	QLIS_LoginPduContinue: [0x%x] SES_STATE_LOGGED_IN NORMAL	App	Info	iSCSI session full feature login.
53585	QLIS_LoginPduContinue: [0x%x] SES_STATE_LOGGED_IN DISCOVERY	App	Info	iSCSI session discovery login.
53586	QLIS_LoginPduContinue: Initiator: %s	App	Info	iSCSI login of initiator: %s.
53587	QLIS_LoginPduContinue: Target: %s	App	Info	iSCSI login of target: %s.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
54274	QLFC_Login: Origin 0x%x, VP Index 0x%x, Id 0x%x	App	Info	Fibre Channel login occurred, origin xx (1 = adapter, 2 = target, 3 = initiator), VP (virtual port) xx, ID (loop ID) xx.
54275	QLFC_Login: Port ID %.2x%.2x%.2x	App	Info	Fibre Channel login occurred with port ID xx.xx.xx.
54276	QLFC_Login: Node Name %.2x%.2x%.2x%.2x%.2x%.2x%.2x%.2x	App	Info	Fibre Channel login occurred with WWNN xx.xx.xx.xx.xx.xx.xx.xx.
54277	QLFC_Login: Port Name %.2x%.2x%.2x%.2x%.2x%.2x%.2x%.2x	App	Info	Fibre Channel login occurred with WWPN xx.xx.xx.xx.xx.xx.xx.xx.
54306	QLFC_Logout: Origin 0x%x, VP Index 0x%x, Id 0x%x	App	Info	Fibre Channel Logout: Origin 0x%x, VP Index 0x%x, Id 0x%x.
54307	QLFC_Logout: Port ID %.2x%.2x%.2x	App	Info	Fibre Channel Logout:: Port ID %.2x%.2x%.2x.
54308	QLFC_Logout: Node Name %.2x%.2x%.2x%.2x%.2x%.2x%.2x%.2x	App	Info	Fibre Channel Logout:: Node Name xx xx xx xx xx xx xx xx.
54309	QLFC_Logout: Port Name %.2x%.2x%.2x%.2x%.2x%.2x%.2x%.2x	App	Info	Fibre Channel Logout: Port Name xx xx xx xx xx xx xx xx.
54359	QLFC_Logout: Port Name %.2x%.2x%.2x%.2x%.2x%.2x%.2x%.2x	App	Info	Fibre Channel login event notification, VP (virtual port) xx.
54683	QLIS_OpenConnectionNotification: Target connection opened (Port %d, DDB %d)	App	Info	iSCSI target connection opened for port %d, data description block (DDB) %d.
54938	QLIS_OpenConnectionNotification: Target connection opened (Port %d, DDB %d)	App	Info	Event notification; iSCSI open connection request.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
54939	QLIS_HandleTeb: UTM_EC_CLOSE_CONNECTION or UTM_EC_CONNECTION_CLOSED	App	Info	Event notification; iSCSI close connection request or connection closed.
54940	QLIS_HandleTeb: UTM_EC_CLOSE_CONNECTION or UTM_EC_CONNECTION_CLOSED	App	Info	Event notification; iSCSI connection closed.
54941	QLIS_HandleTeb:iSNS Server Open Connection succeeded	App	Info	Event notification; connection opened with iSNS server.
54943	QLIS_HandleTeb: UTM_EC_ISNS_SCN	App	Info	Event notification; iSNS registered state change notification (RSCN) received.
54945	QLIS_HandleTeb: UTM_EC_ISNS_CLIENT_DISCOVERED	App	Info	Event notification; iSNS client discovered.
56321	QLMP_Logout: Virtual Target Logged out	App	Info	An array went offline because all the target ports of the array went offline.
56322	QLMP_Logout: Node Name %.2x%.2x%.2x%.2x%.2x%.2x%.2x%.2x	App	Info	WWNN of the array that went offline. This message is tied with ID 56321.
56323	QLMP_Logout: Port Name %.2x%.2x%.2x%.2x%.2x%.2x%.2x%.2x	App	Info	WWPN of the array that went offline. This message is tied with ID 56321.
56346	QLMP_CombineMPDevice: Virtual Target Online	App	Info	An array came online.
56347	QLMP_CombineMPDevice: Node Name %.2x%.2x%.2x%.2x%.2x%.2x%.2x%.2x	App	Info	WWNN of the array that came online. This message is tied with ID 56346.
56348	QLMP_CombineMPDevice: Port Name %.2x%.2x%.2x%.2x%.2x%.2x%.2x%.2x	App	Info	WWPN of the array that came online. This message is tied with ID 56346.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
56842	QLDM_ResumeMigration: Failed to resume job: %d, job's current state: 0x%x, error: %d	App	Info	Failed to resume a paused job.
56865	QLDM_DelayedStart:%d Failed to start job : Job ID: %d	App	Info	Failed to start a delayed schedule job.
56866	Lun is already used for of some other migration job	App	Info	Migration add failed because LUN is part of another migration job.
56867	Selected Lun is a Controller Lun	App	Info	Migration being added with a LUN that is a controller LUN. Data LUNs are required for configuring migration jobs.
56868	Selected Lun is Masked, It cant be used for Offline Migration	App	Info	Migration job being added for a LUN that is masked to an initiator on the router. Mapped LUNs cannot be used for offline migration jobs.
56869	Read Capacity is not available for the Lun	App	Info	Migration job being added for a LUN for which no read capacity information is available. Migration add will fail.
56870	QLDM_CreateMigrationObject: Failed to create Source Lun Object	App	Info	Failed to allocate memory for the source LUN of a migration job.
56871	QLDM_CreateMigrationObject: Failed to create Destination Lun Object	App	Info	Failed to allocate memory for the destination LUN of a migration job.
56872	QLDM_CreateMigrationObject: MigrationObject memory unavailable	App	Info	Failed to allocate memory for the migration job.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
56880	Start time got from user %lu Cur Time: %lu Diff: %d	App	Info	The log shows the configured start time and current time for a delayed migration job.
56881	Failed to stop migration job id %u	App	Info	Failed to stop a migration job; the error message includes the job ID.
56884	QLDM_DeleteMigrationJobByLun: Could not find migration object	App	Info	Did not find a migration job for the associated LUN object.
69652	#: qlutm_init: Diagnostic failed, invalid SRAM	iSCSI	Fatal	iSCSI processor SRAM test failed.
69653	#: qlutm_init: Diagnostic failed, fail reboot	iSCSI	Fatal	iSCSI processor failed diagnostic reboot.
69654	#: qlutm_init: Diagnostic failed, invalid NVRAM	iSCSI	Fatal	iSCSI processor failed NVRAM diagnostic.
69655	#: qlutm_init: Diagnostic failed, invalid DRAM	iSCSI	Fatal	iSCSI processor failed DRAM diagnostic.
69656	#: qlutm_init: Failed to return diagnostic result to Bridge	iSCSI	Fatal	iSCSI processor failed to return diagnostic results.
69941	#: QLUtmProcessResponseQueue: Invalid handle %x EntryType %x	iSCSI	Fatal	Response queue entry contains an invalid handle.
69951	#: QLSetNvram: QLRebootTimer failed AF %x RS %x Time %d	iSCSI	Fatal	Set NVRAM reboot timer failed.
69964	#: QLDisable: QLRebootTimer failed AF %x RS %x Time %d	iSCSI	Fatal	Port disable reboot timer failed.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
69966	##d: QLEnable: QLRebootTimer failed AF %x RS %x Time %d	iSCSI	Fatal	Port enable reboot timer failed.
70224	##d: QLProcSrblessiSNSResponse: Invalid handle %x	iSCSI	Fatal	iSNS response contains an invalid handle.
70400	##d: QLInitializeDevice: QLStartAdapter failed	iSCSI	Fatal	The attempt to start the iSCSI processor failed.
70417	##d: QLInitializeAdapter: QLInitializeFW failed	iSCSI	Fatal	iSCSI processor firmware initialization failed.
70432	##d: QLDoInterruptServiceRoutine: PortFatal interrupt. PortFatalErrorStatus %08x CSR %08x AS %x AF %x	iSCSI	Fatal	iSCSI processor port fatal error.
70448	##d: QLStartAdapter: QLRebootTimer failed AF %x RS %x Time %d	iSCSI	Fatal	The attempt to start the start iSCSI processor reboot timer failed.
70489	##d: QLIsrDecodeMailbox: System Error 8002 MB[1-7] %04x %04x %04x %04x %04x %04x	iSCSI	Fatal	iSCSI processor fatal system error.
70499	##d: QLProcessResponseQueue: Invalid handle for ET_PASSTHROUGH_STATUS	iSCSI	Fatal	Response queue invalid handle for ET pass-through.
70501	##d: QLProcessResponseQueue: Invalid entry type in response queue %x	iSCSI	Fatal	Response queue invalid entry type.
70502	##d: QLProcessResponseQueue: Invalid handle %x EntryType %x	iSCSI	Fatal	Response queue invalid handle for specified entry type.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
70524	##d: QLProcessAen: Invalid event %x	iSCSI	Fatal	Asynchronous event for unknown event type.
70544	##d: QLRebootTimer: Reboot failed!	iSCSI	Fatal	Reboot timer failed.
70563	##d: QLRebootTimer: Reboot failed!	iSCSI	Fatal	iSCSI driver missed iSCSI processor heartbeat. iSCSI processor rebooted.
70564	##d: QLRebootTimer: Reboot failed!	iSCSI	Fatal	iSCSI processor failed to complete operation before time-out.
70609	##d: QLRebootTimer: Reboot failed!	iSCSI	Fatal	iSCSI processor system error restart.
70610	##d: QLProcessSystemError: RebootHba failed	iSCSI	Fatal	iSCSI processor reboot failed.
70784	##d: QLConfigChip: invalid NVRAM	iSCSI	Fatal	iSCSI processor NVRAM invalid (checksum error).
70835	##d: QLStartFw: MBOX_CMD_SET_FLASH failed %x	iSCSI	Fatal	iSCSI controller Set Flash command failed.
70836	##d: QLStartFw: Invalid Fw loader state 0x%x	iSCSI	Fatal	iSCSI controller failed to load firmware.
70837	##d: QLStartFw: Load Fw loader timeout	iSCSI	Fatal	iSCSI controller firmware load operation timed out.
70938	##d: ql_adapter_up: Failed to initialize adapter	iSCSI	Fatal	iSCSI controller failed to initialize.
72351	##d: QLProcSrblessiSNSResponse: Invalid handle %x	iSCSI	Fatal	iSCSI controller reported that an SNS response had an invalid handle.
73990	##d: QLUtmIoctlEnable: Initialize FW failed	iSCSI	Error	iSCSI processor failed firmware initialization.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
74056	##d: QLRUNDiag: MBOX Diag test internal loopback failed %x %x	iSCSI	Error	iSCSI processor failed the internal loopback test.
74057	##d: QLRUNDiag: MBOX Diag test external loopback failed %x %x	iSCSI	Error	iSCSI processor failed the external loopback test.
74068	##d: QLUtmReceiveScsiCmd: Invalid ATIO Continuation type %x	iSCSI	Error	iSCSI processor reported an invalid Accept Target I/O (ATIO) Continuation type x.
74069	##d: QLUtmProcessResponseQueue: Immediate data addr %08x:%08x in unsupported PduType	iSCSI	Error	iSCSI processor reported an immediate data address (xxxxxxxx:xxxxxxxx) in an unsupported PDU type.
74241	##d: QLiSNSEnableCallback: iSNS Server TCP Connect failed	iSCSI	Error	iSCSI processor could not connect with the iSCSI name server (iSNS).
74577	##d: QLIsrDecodeMailbox: NVRAM invalid	iSCSI	Error	iSCSI processor reported that the iSCSI port NVRAM contains invalid data (checksum error).
74580	##d: QLIsrDecodeMailbox: AEN %04x, Duplicate IP address detected, MB[1-5] %04x %04x %04x %04x %04x	iSCSI	Error	iSCSI processor reported a duplicate IP address was detected (address xxxx xxxx xxxx xxxx xxxx).
74587	##d: QLIsrDecodeMailbox: Link down	iSCSI	Error	iSCSI processor reported a link down condition.
74656	##d: QLReadyTimer: Adapter missed heartbeat for %d seconds. Time left %d	iSCSI	Error	Driver failed to receive a heartbeat from the iSCSI processor for the specified number of seconds.
74659	##d: QLReadyTimer: Adapter missed heartbeat for 0x%x seconds	iSCSI	Error	iSCSI processor (adapter) failed to provide a heartbeat for x seconds.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
74660	##d: QLReadyTimer: Abort pTpb=%p failed, DrvCount 0x%x	iSCSI	Error	iSCSI processor failed to complete an abort request.
74661	##d: QLTimer: Abort pTpb=%p, Type %x, Timeout 0x%x DrvCount 0x%x, DdbIndex 0x%x	iSCSI	Error	Driver timed out an iSCSI processor operation and is aborting the operation.
74663	##d: QLReadyTimer: MBOX_CMD %04x %04x %04x %04x %04x %04x %04x %04x timed out	iSCSI	Error	Driver timed out an iSCSI processor mailbox command.
74665	##d: QLReadyTimer: QLisSNSReenable failed.	iSCSI	Error	Driver timed out while attempting to reconnect with the iSNS.
74705	##d: QLProcessSystemError: Restart RISC	iSCSI	Error	iSCSI processor was restarted.
74746	##d: QLInitializeFW: MBOX_CMD_INITIALIZE_FIRMWARE failed %04x %04x %04x %04x %04x	iSCSI	Error	iSCSI processor rejected the firmware initialize command.
74784	##d: QLUpdateInitiatorData: No more room in Initiator Database.	iSCSI	Error	Driver's initiator database is full. The driver is capable of storing 1024 iSCSI initiators in its database. Use the CLI or GUI to remove unwanted/unused iSCSI initiators.
74800	##d: QLSetTargetData: No more room in Target Database.	iSCSI	Error	Driver's target database is full. Use the CLI or GUI to remove unwanted/unused iSCSI targets.
75008	##d: ql_process_error: OB_TCP_IOCB_RSP_W returned DdbInx 0x%x pTpb %p	iSCSI	Error	A TCP retry for a frame failed on the connection ddbIndex. Tpb contains the frame memory address.
86347	##d: QLDisable: Restart RISC	iSCSI	Info	Restart iSCSI processor (RISC).

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
86349	##d: QLEnable: Restart RISC to update EEPROM	iSCSI	Info	EEPROM updated, restart iSCSI processor (RISC).
86874	##d: QLIsrDecodeMailbox: Link up	iSCSI	Info	Link up reported by iSCSI processor for GE1 or GE2.
87346	##d: QLGetFwStateCallback: link 100Mb FDX	iSCSI	Info	iSCSI controller reported a link speed/configuration of 100Mb full-duplex (FDX).
87348	##d: QLGetFwStateCallback: link 1000Mb FDX	iSCSI	Info	iSCSI controller reported a link speed/configuration of 1000Mb FDX.
87350	##d: QLGetFwStateCallback: Invalid link speed 0x%x	iSCSI	Info	iSCSI controller reported an invalid link speed.
102419	##d: qlutm_init: Diagnostic failed, port 1 invalid SRAM	FC	Fatal	FC1 processor SRAM test failed.
102420	##d: qlutm_init: Diagnostic failed, port 1 POST failed	FC	Fatal	FC1 processor power-on self-test (POST) failed.
102421	##d: qlutm_init: Diagnostic failed, port 2 invalid SRAM	FC	Fatal	FC2 processor SRAM test failed.
102422	##d: qlutm_init: Diagnostic failed, port 2 POST failed	FC	Fatal	FC2 processor POST failed.
102423	##d: qlutm_init: Failed to return diagnostic result to Bridge	FC	Fatal	Fibre Channel processor failed to return diagnostic results.
102656	##d: QLInitializeAdapter: Reset ISP failed	FC	Fatal	Fibre Channel processor failed reset.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
102657	##d: QLInitializeAdapter: Load RISC code failed	FC	Fatal	Fibre Channel processor firmware load failed.
102658	##d: QLInitializeAdapter: Load ISP2322 receive sequencer code failed	FC	Fatal	Fibre Channel processor receive sequencer code load failed.
102659	##d: QLInitializeAdapter: Load ISP2322 transmit sequencer code failed	FC	Fatal	Fibre Channel processor transmit sequencer code load failed.
102662	##d: QLInitializeAdapter: Verify Checksum command failed (%x)	FC	Fatal	Fibre Channel processor firmware checksum failed.
102680	##d: QLInitializeFW: FAILED	FC	Fatal	Fibre Channel processor firmware initialization failed.
102688	##d: QLInterruptServiceRoutine: Risc pause %x with parity error hccr %x, Disable adapter	FC	Fatal	Fibre Channel processor paused due to internal parity error.
102689	##d: QLInterruptServiceRoutine: Invalid interrupt status: %x	FC	Fatal	Fibre Channel processor returned an invalid interrupt status.
102716	##d: QLIsrEventHandler: System error event (%x), MB1=%x, MB2=%x, MB3=%x, MB4=%x, MB5=%x, MB6=%x, MB7=%x	FC	Fatal	Fibre Channel processor system error.
102746	##d: QLProcessResponseQueue: Invalid handle %x, type %x	FC	Fatal	Response queue entry contains an invalid handle.
102752	##d: QLTimer: Ext Ram parity error exceed limit cnt 0x%x, limit 0x%x, Disabled adapter	FC	Fatal	Fibre Channel processor external SRAM parity error count exceeded limit; Fibre Channel port disabled.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
102755	#%d: QLTimer: Heartbeat failed	FC	Fatal	Fibre Channel processor heartbeat failed.
102800	#%d: QLRestartRisc: restart RISC	FC	Fatal	Fibre Channel processor being restarted.
106583	#%d: QLUtmReceiveIo: Path invalid/FW No resource count %x	FC	Error	Fibre Channel processor received a SCSI command for an unknown target path or has run out of resources to execute additional commands.
106589	#%d: QLIoctlEnable: Adapter disabled	FC	Error	Fibre Channel processor was disabled by an IOCTL request to the driver.
106590	#%d: QLIoctlEnable: Initialize FW error	FC	Error	Fibre Channel processor firmware failed initialization. The request to initialize was received by the driver in an IOCTL request.
106592	#%d: QLIoctlRunDiag: Diagnostic loopback command failed %x % %x %x	FC	Error	Fibre Channel processor failed the external loopback test.
106593	#%d: QLIoctlDisable: Re-initialize adapter failed	FC	Error	Fibre Channel processor failed to re-initialize in response to an IOCTL disable request.
106803	#%d: QLIsrEventHandler: Link down (%x)	FC	Error	Fibre Channel processor reported a link down condition.
106813	#%d: QLIsrEventHandler: Unexpected async event (%x), MB1=%x, MB2=%x, MB3=%x, MB4=%x, MB5=%x, MB6=%x, MB7=%x	FC	Error	Fibre Channel processor reported an unexpected asynchronous event. The mailbox registers provide status, event code, and data related to the event.
106847	#%d: QLProcessResponseQueue: Invalid EntryStatus %x, type %x	FC	Error	Fibre Channel controller reported an invalid entry status.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
106851	##d: QLTimer: Heartbeat failed	FC	Error	Fibre Channel controller failed to provide a heartbeat.
106853	##d: QLTimer: Link error count (0x%x) exceeded, link down	FC	Error	Driver has determined that the Fibre Channel link is unreliable and unusable due to the number of errors encountered. The link has been taken down.
106912	##d: QLReserveLoopId: out of loop Ids	FC	Error	Fibre Channel processor was unable to obtain the number of loop IDs required. This failure occurs only when the Fibre Channel processor is running multi-ID firmware.
106928	##d: QLMarkDeviceOffline: Device Id: %x marked offline, cLinkDownTimeout = %x, cPortDownRetryCount=%x	FC	Error	Driver was unable to re-establish connection to the target within the time-out and retry counts, and is therefore marking it <i>offline</i> .
106948	##d: QLSnsGetAllNext: Name server login FAILED %x	FC	Error	Fibre Channel processor is unable to log into the Fibre Channel fabric name server.
107029	##d: QLUpdateDeviceData: out of slots in host database	FC	Error	Driver's host (initiator) database is full.
107030	##d: QLUpdateDeviceData: out of slots in target database	FC	Error	Driver's target database is full.
107041	##d: QLUpdateDeviceDatabase 0x%x: GET_ID failed %x	FC	Error	Driver's host (initiator) database is full. Maximum host database is 64.
107056	##d: QLUpdateDeviceDatabase 0x%x: out of slots in host database	FC	Error	Drivers host (initiator) database is full.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
107078	##d: QLUpdatePort 0x%x: out of slots in host database	FC	Error	Driver was unable to re-establish connection to the target within the time-out and retry counts, and is therefore marking it <i>offline</i> .
107984	##d: QLWriteFlashDword: Write fails at addr 0x%x data 0x%x	FC	Error	Fibre Channel controller failed a Flash write (address x data x).
108032	##d: QLGetVpDatabase: MBOX_CMD_GET_VP_DATABASE for VP %d fatal error	FC	Error	Fibre Channel controller failed the Get VP Database command (for virtual port %d).
108033	##d: QLGetVpDatabase: MBOX_CMD_GET_VP_DATABASE for VP %d failed %x	FC	Error	Fibre Channel controller failed the Get VP Database command (for virtual port %d) with status x.
108049	##d: QLVerifyMenloFw: EXECUTE_COMMAND_IOCTL failed MB0 %x MB1 %x	FC	Error	Fibre Channel controller reported failure status for an Execute IOCB (input/output control block) command.
108050	##d: QLVerifyMenloFw: EXECUTE_COMMAND_IOCTL fatal error	FC	Error	Fibre Channel controller reported a fatal error while processing an Execute IOCB command.
108064	##d: QLGetFwState: Get Firmware State failed 0-3 %x %x %x %x	FC	Error	Fibre Channel controller reported failure status for a Get Firmware State command.
118882	##d: QLIoctlDisable: Reset adapter	FC	Info	Request to reset the Fibre Channel processor (adapter) received from IOCTL interface.
119088	##d: QLIsrEventHandler: LIP occurred (%x): mailbox1 = %x	FC	Info	Fibre Channel loop initialization process (LIP) occurred. The LIP type is reported, as is the contents of the Fibre Channel processor's mailbox 1 register.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
119089	<code>##d: QLIsrEventHandler: LIP reset occurred (%x): mailbox1 = %x</code>	FC	Info	Fibre Channel LIP reset occurred. The LIP reset type is reported, as is the contents of the Fibre Channel processor's mailbox 1 register.
119090	<code>##d: QLIsrEventHandler: Link up (%x) mailbox1 = %x</code>	FC	Info	Fibre Channel link up occurred. Event status is reported, as is the contents of the Fibre Channel processor's mailbox 1 register.
119092	<code>##d: QLIsrEventHandler: Link mode up (%x): RunTimeMode=%x</code>	FC	Info	Fibre Channel link up occurred. Event status is reported, as is the RunTimeMode (0 = loop, 1 = point-to-point).
119093	<code>##d: QLIsrEventHandler: RSCN update (%x) rscnInfo: %x</code>	FC	Info	An RSCN was received. Event status is reported, as is the RSCN information.
119097	<code>##d: QLIsrEventHandler: Port update (%x) mbl-3 %x %x %x</code>	FC	Info	Fibre Channel port update. Event status is reported, as is the contents of the Fibre Channel processor's mailbox 1, 2, and 3 registers.
119144	<code>##d: QLTimer: VP %d discover a reject device PID %02x%02x%02x</code>	FC	Info	A virtual port logged into a device, but the device rejected the login.
120278	<code>##d: QLFlashGetNvram: Invalid Serial Link Control 0x%x for port %d</code>	FC	Info	Update NVRAM for the invalid serial link control for the mezzanine platform.
120373	<code>##d: QLIsrEventHandler: DCBX Completed (%x)</code>	FC	Info	For FCoE protocol, the data center bridging exchange protocol (DCBX) is complete.
120374	<code>##d: QLIsrEventHandler: IDC Completion (%x) %x, %x, %x, %x, %x, %x, %x</code>	FC	Info	For FCoE protocol, the inter-driver communication (IDC) is complete.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
120375	##d: QLIsrEventHandler: IDC Notification (%x), %x, %x, %x, %x, %x, %x, %x	FC	Info	For FCoE protocol, the IDC notification came from another driver.
120376	##d: QLIsrEventHandler: IDC Time Extended (%x), %x, %x, %x, %x, %x, %x, %x	FC	Info	For FCoE protocol, the IDC time extended notification is received.
120377	##d: QLIsrEventHandler: DCBX Started (%x)	FC	Info	For FCoE protocol, the DCBX protocol has started.
120378	##d: QLIsrEventHandler: FCF Config Error (%x), MB1=%x	FC	Info	For FCoE protocol, the FCF configuration error occurred.
120379	##d: QLIsrEventHandler: DCBX Parameter Changed (%x)	FC	Info	For FCoE protocol, the DCBX parameters are changed.
139265	QBRPC_Initialize: Entered	User	Error	Remote procedure call (RPC) server initialization entry point.
139266	QBRPC_Initialize:GetBridge Mem Allocation error	User	Error	Get System API memory allocation failed.
139267	QBRPC_Initialize:GetBridgeAdv Mem Allocation error	User	Error	Get System Advanced API memory allocation failed.
139268	QBRPC_Initialize:GetMgmt Mem Allocation error	User	Error	Get Management API memory allocation failed.
139269	QBRPC_Initialize:GetIscsi Mem Allocation error	User	Error	Get iSCSI API memory allocation failed.
139270	QBRPC_Initialize:GetIscsiAdv Mem Allocation error	User	Error	Get iSCSI advanced API memory allocation failed.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
139271	QBRPC_Initialize:GetIsns Mem Allocation error	User	Error	Get iSNS API memory allocation failed.
139272	QBRPC_Initialize:GetFcIntfc Mem Allocation error	User	Error	Get Fibre Channel interface API memory allocation failed.
139273	QBRPC_Initialize:GetFcAdv Mem Allocation error	User	Error	Get Fibre Channel Advanced API memory allocation failed.
139280	QBRPC_Initialize:GetFcSfp Mem Allocation error	User	Error	Failed memory allocation for Get Fibre Channel SFP API.
139281	QBRPC_Initialize:GetLog Mem Allocation error	User	Error	Failed memory allocation for Get Log API.
139282	QBRPC_Initialize:GetStats Mem Allocation error	User	Error	Failed memory allocation for Get Statistics API.
139283	QBRPC_Initialize:InitListMem Allocation error	User	Error	Failed memory allocation for Get Initiator List API.
139284	QBRPC_Initialize:TargetList Mem Allocation error	User	Error	Failed memory allocation for Get Target List API.
139285	QBRPC_Initialize:LunList MemAllocation error	User	Error	Failed memory allocation for Get LUN List API.
139286	QBRPC_Initialize:PresTarget Mem Allocation error	User	Error	Failed memory allocation for Get Presented Targets List API.
139287	QBRPC_Initialize:LunMask Mem Allocation error	User	Error	Failed memory allocation for Get LUN Mask API.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
139288	QBRPC_Initialize:Init Mem Allocation error	User	Error	Failed memory allocation for Initiator API.
139289	QBRPC_Initialize:TgtDevice Mem Allocation error	User	Error	Failed memory allocation for Target Device API.
139296	QBRPC_Initialize:FcTgt Mem Allocation error	User	Error	Failed memory allocation for Fibre Channel Target API.
139297	QBRPC_Initialize:BridgeStatus Mem Allocation error	User	Error	Failed memory allocation for System Status API.
139298	QBRPC_Initialize:Diag Mem Allocation error	User	Error	Failed memory allocation for Diagnostic API.
139299	QBRPC_Initialize:DiagLog Mem Allocation error	User	Error	Failed memory allocation for Diagnostic Log API.
139300	QBRPC_Initialize:FruImage Mem Allocation error	User	Error	Failed memory allocation for FRU Image API.
139301	QBRPC_Initialize:OemMfg Mem Allocation error	User	Error	Failed memory allocation for OEM Manufacturing API.
139302	QBRPC_Initialize:Status Mem Allocation error	User	Error	Failed memory allocation for Status API.
139303	QBRPC_Initialize:TcpIpStats Mem Allocation error	User	Error	Failed memory allocation for TCP/IP Statistics API.
139304	QBRPC_Initialize:NtpStats Mem Allocation error	User	Error	Failed memory allocation for NTP Status API.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
139305	QBRPC_Initialize:LunList MemAlloc error	User	Error	Failed memory allocation for LUN List API.
139315	QBRPC_FreeResources:Entered	User	Error	RPC free resources entry point.
139553	checkDuplicateIp: Detected Error %08x %08x%04x	User	Error	Detected duplicate IP address for management port.
139930	FcipRoute#%d Failed with Memory Allocation Error	App	Error	FCIP route add/mod failed because of lack of memory.
139931	FcipRoute#%d Failed with Invalid Arg Error	App	Error	FCIP route add/mod failed because the arguments supplied were incorrect.
139932	FcipRoute#%d Failed with Unknown Device Error	App	Error	FCIP route add/mod failed because of incorrect configuration.
139933	FcipRoute#%d Failed with Kernel Error	App	Error	FCIP route add/mod failed because of configuration error.
139934	FcipRoute#%d Failed with Network Configuration Error	App	Error	FCIP route add/mod failed because of the Ethernet network configuration.
139935	FcipRoute#%d Failed with Persistence Read Failure	App	Error	FCIP route add/mod failed because of an error in reading the saved configuration from persistence.
139936	FcipRoute#%d Failed with Persistence Write Failure	App	Error	FCIP route add/mod failed because of an error in writing the route configuration to persistence.
139937	FcipRoute#%d Failed with IP Address Reuse Error	App	Error	FCIP route add/mod failed because an IP address supplied is already under use.
139938	FcipRoute#%d Add Failed because relevant FCIP Licence not available	App	Error	FCIP route add/mod failed because FCIP license is not present.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
151842	FW Upgrade performed: new version is: %d.%d.%d.%d	User	Info	A firmware upgrade was performed; the new version is: <i>d.d.d.d.</i>
151843	REBOOT/SHUTDOWN Command from user. Code=%d	User	Info	User issued a REBOOT or SHUTDOWN command.
151889	##d: qapisetfcinterfaceparams_1_svc: FC port configuration changed	User	Info	Fibre Channel port configuration has changed.
151890	##d: qapisetiscsiinterfaceparams_1_svc: iSCSI port configuration changed	User	Info	iSCSI port configuration has changed.
151891	##d: qapisetisns_1_svc:iSNS configuration changed	User	Info	iSNS configuration has changed.
151892	qapisetntpparams_1_svc: NTP configuration changed	User	Info	NTP configuration has changed.
151893	##d: qapisetvlanparams_1_svc: VLAN configuration changed	User	Info	VLAN configuration has changed.
151894	qapisetlunmask_1_svc: Lunmask added for LUN %d	User	Info	A LUN mask was added for LUN %d.
151895	qapisetlunmask_1_svc: Lunmask removed for LUN %d	User	Info	LUN mask was removed for LUN %d.
151896	qapisetmgmintfcparams_1_svc:Management port configuration changed	User	Info	Management port configuration has changed.
151897	qapisetbridgebasicinfo_1_svc:Bridge configuration changed	User	Info	Router configuration has changed.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
151908	GE%d: Port status changed by user to ENABLED.	User	Info	GE port %d was enabled user.
151909	GE%d: Port status changed by user to DISABLED.	User	Info	GE port %d was disabled by user.
151910	FC%d: Port status changed by user to ENABLED.	User	Info	Fibre Channel port %d was enabled by user.
151911	FC%d: Port status changed by user to DISABLED.	User	Info	Fibre Channel port %d was disabled by user.
151912	qapimaptargetdevice_1_svc: Target WWPN: %.2x%.2x%.2x%.2x%.2x%.2x%.2x mapped to iSCSI portal %d.	User	Info	Target at WWPN: xx.xx.xx.xx.xx.xx.xx.xx has been mapped to iSCSI portal %d.
151913	qapimaptargetdevice_1_svc: Target WWPN: %.2x%.2x%.2x%.2x%.2x%.2x%.2x unmapped from iSCSI portal %d.	User	Info	Target at WWPN: xx.xx.xx.xx.xx.xx.xx.xx has been unmapped from iSCSI portal %d.
152069	FcipRoute#%d Added	App	Info	FCIP route #n has been successfully added.
152070	FcipRoute#%d Modified	App	Info	FCIP route #n has been successfully modified.
152071	FcipRoute#%d Removed	App	Info	FCIP route #n has been successfully removed.
152082	qapiaddmodifyinitiator_1_svc : Initiator Configuration Changed	User	Info	An initiator's configuration has changed.
152083	qapiremoveinitiator_1_svc : Initiator Removed	User	Info	An initiator has been removed.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
152096	qapisetmigrfctargets_1_svc: Configuration Changed for migration target	User	Info	A set array was done on one of the arrays.
152099	LogMigration: Error in Writting log file	User	Info	Encountered an error while updating the migration log entry. Some migration log entries might be missing.
152100	qapiaddgroup_1_svc: Added Group with id %d	User	Info	Group with ID specified in the log was added.
152101	qapiremovegroup_1_svc: Removed Group with id %d	User	Info	Group with ID specified in the log was removed.
152102	qapiupdategroup_1_svc: Updated Group with id %d	User	Info	Group with ID specified in the log was updated.
152103	qapisetserialjobs_1_svc: Serial Time %lu	User	Info	Serial schedule jobs scheduled to start at time specified in the log.
152104	qapireadjustpriority_1_svc: Readjust Priority Failed on line %d with error %d	User	Info	Readjust priority command completed with an error. Error code 2 indicates no scheduled jobs were found. Error code 16 indicates a job with priority 1 configured.
152105	qapireadjustpriority_1_svc: Readjust Priority Done	User	Info	Completed readjusting the serial schedule priority of migration jobs.
152106	qapiupdatemigration_1_svc: Update Migration returned with error %d	User	Info	An update migration action [Start/Stop/Pause/Resume] has failed.
152107	RemoveMigration:%d with Job Id %d and error = %d	User	Info	Failed to remove a migration job with ID specified in the log.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
152108	ValidateSerialSchedule: Previous time %ld New time %ld	User	Info	Reset the serial schedule delayed time to invalid if the last serial schedule job was removed.
152109	addMigration: Creating migration Job Failed with error %d	User	Info	Failed to create a migration job.
152129	sysTempMon: Left PCM Installed	User	Info	Left power and cooling module (PCM) is or has been installed.
152130	sysTempMon: Left PCM Un-installed	User	Info	Left PCM is or has been uninstalled.
152131	sysTempMon: Right PCM Installed	User	Info	Right PCM is or has been installed.
152132	sysTempMon: Right PCM Un-installed	User	Info	Right PCM is or has been uninstalled.
152133	sysTempMon: Power for Left PCM Plugged-in	User	Info	Left PCM is connected to AC power.
152134	sysTempMon: Power for Left PCM Un-plugged	User	Info	Left PCM is not connected to AC power (unplugged).
152135	sysTempMon: Power for Right PCM Plugged-in	User	Info	Right PCM is connected to AC power.
152136	sysTempMon: Power for Right PCM Un-plugged	User	Info	Right PCM is not connected to AC power (unplugged).
152137	sysTempMon: Slot 1 (R1) PCM Fan%d faulty	User	Info	Left PCM (#1) is reporting a faulty fan.
152138	sysTempMon: Slot 2 (R2) PCM Fan%d faulty	User	Info	Left PCM (#1) is reporting a healthy fan.
152139	sysTempMon: Slot 1 (R1) PCM Fan%d healthy	User	Info	Right PCM (#2) is reporting a faulty fan.
152140	sysTempMon: Slot 2 (R2) PCM Fan%d healthy	User	Info	Right PCM (#2) is reporting a healthy fan.
152141	sysTempMon: Over Temperature Front: %dC Rear: %dC CPU1: %dC CPU2: %dC	User	Info	Router has detected an over temperature: Front: %dC Rear: %dC CPU1: %dC CPU2: %dC.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
152142	sysTempMon: Setting the fan speed to high	User	Info	Fan(s) speed has been set to high.
152143	sysTempMon: Setting the fan speed to normal	User	Info	Fan(s) speed has been set to normal.
152144	sysTempMon: Temperature back to safe value. Front: %dC Rear: %dC CPU1: %dC CPU2: %dC	User	Info	Router temperature has returned to normal operating range: Front: %dC Rear: %dC CPU1: %dC CPU2: %dC.
152145	sysTempMon: Critical Temperature, Shutting Down Front: %dC Rear: %dC CPU1: %dC CPU2: %dC	User	Info	Router has reached a critical temperature and is shutting down: Front: %dC Rear: %dC CPU1: %dC CPU2: %dC.
172040	FcipRoute#%d: Cleaning FCIP Instance	FCIP	Error	This is an informative message, not an error. It indicates that an FCIP was removed or modified.
172231	FcipRoute#%d: Did not get the keepalive msg form remote peer	FCIP	Error	FCIP route #n has not been able to communicate with the remote peer for 10 seconds.
172238	FcipRoute#%d: Synchronization Error on Receive	FCIP	Error	FCIP route #n local node is out of sync with the remote peer.
172239	FcipRoute#%d: Decompression Error on Receive	FCIP	Error	FCIP route #n detected an error in de-compression.
172240	FcipRoute#%d: De-encapsulation Error on Receive	FCIP	Error	FCIP route #n local node is out of sync with the remote peer.
172245	FcipRoute#%d: Transmit Failure	FCIP	Error	FCIP route #n not able to transmit data.
172246	FcipRoute#%d: Remote Peer Disconnected	FCIP	Error	FCIP route #n remote peer closed connection.
172247	FcipRoute#%d: Failed to send FC Up/Down	FCIP	Error	Not able to bring the Fibre Channel port up or down.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
172249	FcipRoute#%d: FCIP Link Down	FCIP	Error	FCIP link is down for FCIP route # <i>n</i> .
172250	FcipRoute#%d: TCP Link Down	FCIP	Error	TCP link for FCIP route # <i>n</i> has been established.
172253	FcipRoute#%d: Remote Peer IP Address Validation Failed. Expected IP Address: %d.%d.%d.%d, Actual IP Address: %d.%d.%d.%d	FCIP	Error	FCIP route # <i>n</i> : Received connection from unauthorized remote peer.
172272	FcipRoute#%d: Tcp Client's connect attempt failed	FCIP	Error	FCIP route # <i>n</i> is not able to establish the TCP connection with remote peer.
172273	FcipRoute#%d: Tcp Server's Listen attempt failed	FCIP	Error	FCIP route # <i>n</i> TCP server is not able to accept an incoming TCP connection. The TCP server will start listening for new TCP connections.
172300	FcipRoute#%d: tcpi_total_retrans %d, tcpi_reordering %d, tcpi_probes %d	FCIP	Error	Displays FCIP route # <i>n</i> 's WAN characteristics, including TCP total retransmission for entire connection (tcpi_total_retrans), packet reordering metric (tcpi_reordering), and unanswered zero window probe (tcpi_probes).
172301	FcipRoute#%d: Did not get the keepalive msg from remote peer last %lu, curr %lu	FCIP	Error	The FCIP route # <i>n</i> has not been able to communicate with its remote peer for 10 seconds resulting in a link drop due to a keepalive time-out.
172302	FcipRoute#%d: TCP Link Down, TCP Stats: SACKed=%d TCP Total ReTransmitted=%d	FCIP	Error	The TCP link for FCIP route # <i>n</i> has disconnected. The TCP statistics for the connection include total SACKs (selective acknowledgements) and total retransmission for the connection.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
172303	FcipRoute#%d: TCP Link Down, MAC Stats: Tx Dropped Count=%ld Rx Dropped Count=%ld Tx Pause Count=%ld Rx Pause Count=%ld	FCIP	Error	The TCP link for FCIP route # <i>n</i> has disconnected. The MAC or Ethernet statistics include total packet dropped during transmit (TxDropped), total packet dropped during receive (RxDropped), total Ethernet pause frames transmitted (TxPause), and total Ethernet pause frames received (RxPause).
172304	FcipRoute#%d: Tcp Retranmissions in last 10 Sec %d, OutStanding Completions %d FC Frames	FCIP	Error	The total number of TCP retransmissions that happened in the last 10 seconds before the link was brought down due to a keepalive time-out. It also displays the total number of outstanding transmissions that were pending to be transmitted through the GbE port.
172322	FcipRoute#%d: FC link on the remote peer went down	FCIP	Error	The FCIP route # <i>n</i> went down because the Fibre Channel port on the remote peer went down.
184515	FcipRoute#%d: TCP Link Up	FCIP	Info	TCP link for FCIP route # <i>n</i> has been established.
184536	FcipRoute#%d: FCIP Link Up	FCIP	Info	FCIP link is up for FCIP route # <i>n</i> .
184542	FcipRoute#%d: VLAN Info Unavailable	FCIP	Error	FCIP route # <i>n</i> : Incorrect VLAN configuration.
205571	QL3xxx:%s: Auto Negotiation error detected	NIC	Error	Ethernet port was not able to negotiate the configured speed.
205572	QL3xxx:eth%d: Unsupported speed portConfig 0x%x	NIC	Error	Ethernet port speed is not supported.
206080	QL3xxx:ql3xxx_probe: cannot allocate ethernet device %s	NIC	Error	Ethernet device could not be configured.

Table B-1. iSR6200 Router Log Messages (Continued)

ID	Log Message	Module Type	Msg. Type	Description
206089	QL3xxx:ql3xxx_probe: cannot register network device %s	NIC	Error	The Ethernet port was not able to register as a network device, resulting in a port initialization error for the specified network device.
206114	QL3xxx:eth%d: TCP/IP checksum error - TotalChecksumErrorCount = %lu	NIC	Error	The total number of TCP checksum errors detected on the Ethernet link belonging to the eth#%d port.
217856	QL3xxx:%s: PHY Downshift occurred	NIC	Info	Ethernet port is operating at 100Mbps speed.
217857	QL3xxx:%s: Link Up	NIC	Info	Ethernet link is up.
217858	QL3xxx:%s: Link Down	NIC	Info	Ethernet link is down.
218389	QL3xxx:%s Adapter Down	NIC	Info	Ethernet port is down.
218401	QL3xxx:%s Adapter Up	NIC	Info	Ethernet port is up.
233473	"memory monitor: Detected Uncorrectable Ecc %08lx system is rebooting in 5 secs\n"	System	Fatal	Uncorrectable memory error detected at address provided in log message.
233474	"Failed to register interrupt handler!\n"	System	Fatal	Attempt to register the interrupt handler failed.
233475	"%s class_simple_create failed\n"	System	Fatal	Failed class_simple_create system call from memory monitor initialization routine.
237572	"Failed to kill sys killer %d\n"	System	Error	Failed to kill system task.
237573	Temperature over high threshold %d	System	Error	Router temperature has exceeded the high temperature threshold.
249862	Temperature is back to normal range %d	System	Info	Router temperature has returned to the normal operating range.

Glossary

adapter

The board that interfaces between the host system and the target devices. Adapter is synonymous with *host bus adapter (HBA)*, *host adapter*, and *adapter board*.

adapter port

A port on the adapter board.

adapter port beacon

An LED on the adapter. Flashing it enables you to locate the adapter.

arbitrated loop

A circular (ring) topology (versus point-to-point) where two or more [ports](#) can be interconnected, but only two ports can communicate at a time. All communication passes through all ports connected to the loop.

bandwidth

A measure of the volume of data that can be transmitted at a given transmission rate. A 1-Gbps/2-Gbps Fibre Channel [port](#) can transmit or receive at nominal rates of 1- or 2-Gbps, depending on the device to which it is connected. This corresponds to actual bandwidth values of 106MB and 212MB, respectively.

challenge-handshake authentication protocol

See [CHAP](#).

CHAP

Challenge-handshake authentication protocol. CHAP is used for remote logon, usually between a client and server or a Web browser and Web server. A challenge/response is a security mechanism for verifying the identity of a person or process without revealing a secret password that is shared by the two entities. CHAP is also referred to as a *three-way handshake*.

CLI

Command line interface. A program interface driven by entering commands and parameters.

command line interface

See [CLI](#).

CRC

Cyclic redundancy check. A type of check value designed to catch most transmission errors.

cyclic redundancy check

See [CRC](#).

data center bridging exchange protocol

See [DCBX](#).

DCBX

Data center bridging exchange protocol. Used by DCB devices to exchange configuration information with directly connected peers. The protocol may also be used for misconfiguration detection and for configuration of the peer.

device

A [target](#), typically a disk drive. Hardware such as a disk drive, tape drive, printer, or keyboard that is installed in or connected to a system. In Fibre Channel, a *target* device.

driver

The software that interfaces between the file system and a physical data storage device or network media.

E_Port

Expansion port. A [port](#) in a Fibre Channel switch that connects to another Fibre Channel switch or bridge device by an inter-switch link. E_Ports are used to link Fibre Channel switches to form a multi-switch [fabric](#).

EEPROM

Electrically erasable programmable read-only memory. Memory that can be erased (entirely, not selectively) using higher electrical voltages.

electrically erasable programmable read-only memory

See [EEPROM](#).

Enhanced Ethernet

Also called *data center Ethernet* or *converged enhanced Ethernet*. Refers to new enhancements to the existing Ethernet standard that eliminate Ethernet's inherently lossy nature and make 10Gb Ethernet a viable storage networking transport.

Ethernet

The most widely used LAN technology that transmits information between computer, typically at speeds of 10 and 100 million bits per second (Mbps).

expansion port

See [E_Port](#).

F_Port

The *fabric* port in a Fibre Channel fabric switch provides a point-to-point link attachment to a single [N_Port](#). F_Ports are intermediate ports in virtual point-to-point links between end ports, such as N_Port to F_Port to F_Port to N_Port using a single Fibre Channel fabric switch.

fabric

A fabric consists of cross-connected Fibre Channel devices and switches.

fabric loop port

See [FL_Port](#).

fabric port

A [F_Port](#) or [FL_Port](#).

fabric switch

Also, switched fabric. A fabric switch connects multiple devices from independent Fibre Channel-arbitrated loops (FC-ALs) and point-to-point topologies into a fabric using Fibre Channel switches.

failover path

Software feature that ensures data availability and system reliability by assigning alternate path and automatic [adapter](#) failover for device resources. This feature is available only in Windows 2000, Windows Server 2003, Windows Vista, Novell NetWare, Red Hat Linux, and SUSE Linux. (Windows XP and Windows Server 2008 do *not* support failover.)

FC

See [Fibre Channel](#).

FC-IP mode

Data transportation mode in which the iSR6200 transports Fibre Channel frames over a TCP/IP connection using the [FCIP](#) protocol to connect two iSR6200 routers. In FC-IP mode, a port pair (one Fibre Channel port and one IP port on the same router) on a local iSR6200 and another port pair on a remote router form an FCIP route.

FCIP

Fibre Channel over IP. Protocol that enables transmission of Fibre Channel information by tunneling data on a [SAN](#) over IP networks. An alternative to [iSCSI](#). Also known as *Fibre Channel tunneling*.

FCoE

Fibre Channel over Ethernet. A new technology defined by the T11 standards body that allows traditional Fibre Channel storage networking traffic to travel over an Ethernet link by encapsulating Fibre Channel frames inside Layer 2 Ethernet frames. For more information, visit www.fcoe.com.

FCP

Fibre Channel protocol. SCSI to Fibre Channel mapping.

Fibre Channel

A high-speed serial interface technology that supports other higher layer protocols such as [SCSI](#) and [IP](#).

Fibre Channel over Ethernet

See [FCoE](#).

Fibre Channel over IP

See [FCIP](#).

field replaceable unit

See [FRU](#).

FL_Port

Fabric loop port. In Fibre Channel, the [fabric switch](#) is capable of Fibre Channel arbitrated loop operations and is connected to one or more [NL_Ports](#) by a Fibre Channel Arbitrated Loop. An FL_Port becomes a shared entry point for public NL_Port devices to a Fibre Channel fabric. FL_Ports are intermediate ports in virtual point-to-point links between end ports that do not reside on the same loop, for example NL_Port to FL_Port to F_Port to N_Port through a single Fibre Channel fabric switch.

Flash

Non-volatile memory where the boot code is saved. At times, Flash and *boot code* are used interchangeably.

Flash BIOS

A QLA2xxx [adapter](#)'s Flash programmable read-only memory (PROM) contains the code that allows booting from the adapter at startup.

frame

Data unit consisting of a start-of-frame (SOF) delimiter, header, data payload, [CRC](#), and an end-of-frame (EOF) delimiter.

FRU

Field replaceable unit. Component that can be replaced in the field upon failure.

G_Port

Generic port. A port that can operate as either an E_Port or an F_Port. A G_Port can determine operating mode at switch port initialization, F_Port when an N_Port attachment is determined, E_Port when an E_Port attachment is determined. See [E_Port](#), [F_Port](#), [FL_Port](#), [L_Port](#), [N_Port](#), [NL_Port](#).

generic port

See [G_Port](#).

graphical user interface

See [GUI](#).

GUI

Graphical user interface. A user interface that is based upon icons and visual relationships rather than text.

heartbeat LED

A chassis LED that indicates the router status.

hot replaceable

Also known as *hot swappable*; it means you can add new devices or remove existing ones when the system is running.

IANA

Internet Assigned Numbers Authority (IANA) is responsible for the global coordination of the DNS root, IP addressing, and other Internet protocol resources.

initiator

System component, such as a network interface card, that originates an I/O operation.

Internet Assigned Numbers Authority

See [IANA](#).

Internet Protocol

See [IP](#).

Internet small computer system interface

See [iSCSI](#).

IOCTL

Input/output control. A system call in Unix and Linux systems that allows an application to control or communicate with a device driver outside usual read/write operations.

IP

Internet Protocol. A method by which data are sent from one computer to another over the Internet. IP specifies the format of packets, also called *datagrams*, and the addressing scheme.

iSCSI

Internet small computer system interface. Protocol that encapsulates data into IP packets to send over Ethernet connections.

iSNS

Internet simple name service is used for discovery and management of IP-based SANs.

jumbo frames

Large [IP](#) frames used in high-performance networks to increase performance over long distances. Jumbo frames generally means 9,000 bytes for Gigabit [Ethernet](#), but can refer to anything over the IP [MTU](#), which is 1,500 bytes on an Ethernet.

L_Port

Loop port. Does arbitrated loop functions and protocols. NL_Ports and FL_Ports are examples of loop-capable ports. See [E_Port](#), [F_Port](#), [FL_Port](#), [G_Port](#), [N_Port](#), [NL_Port](#).

loop port

See [L_Port](#).

LIP

Loop initialization process. The initialization process in an arbitrated loop that occurs when the loop is powered up or a new device is added. One function of a LIP is to assign addresses. All data transmission on the loop is suspended during a LIP.

load balancing

A software feature that improves system performance by balancing device access between multiple ports for maximum resource efficiency.

loop initialization process

See [LIP](#).

loopback

Diagnostic tool that routes transmit data through a loopback connector back to the same adapter.

LUN

Logical unit number, a subdivision of a SCSI target. It is the small integer handle that differentiates an individual disk drive or partition (volume) within a common SCSI target device such as a disk array. Technically, a LUN can be a single physical disk drive, multiple physical disk drives, or a portion (volume) of a single physical disk drive. However, LUNs are typically not entire disk drives but rather virtual partitions (volumes) of a RAID set.

Using LUNs, the Fibre Channel host can address multiple peripheral devices that may share a common controller.

maintenance button

Multifunction momentary switch on the front panel of the router.

management workstation

PC workstation used to manage routers remotely by connecting to the routers using the SANsurfer Router Manager or CLI commands.

maximum transmission unit

See [MTU](#).

media

Physical-layer information carriers. Fibre Channel supports several different physical media: copper, multimode optical, and single-mode optical. All Fibre Channel protocols are supported on all media.

MIB

Management information base. A set of guidelines and definitions for SNMP functions.

mid-plane

Located inside the iSR6200 chassis between the blades and their corresponding [PCMs](#), the mid-plane connects the removable power supply and the iSR6200 blades.

MTU

Maximum transmission unit. Refers to the size (in bytes) of the largest packet (IP datagram) that a specified layer of a communications protocol can transfer.

N_Port

Node port. Connects by a point-to-point link to either a single N_Port or a single F_Port. N_Ports handle creation, detection, and flow of message units to and from the connected systems. N_Ports are end ports in virtual point-to-point links through a fabric, for example N_Port to F_Port to F_Port to N_Port using a single Fibre Channel fabric switch. See also [FL_Port](#).

NL_Port

Node loop port. A port capable of arbitrated loop functions and protocols. An NL_Port connects through an arbitrated loop to other NL_Port and at most a single FL_Port. NL_Ports handle creation, detection, and flow of message units to and from the connected systems. NL_Ports are end ports in virtual point-to-point links through a fabric, such as NL_Port to F_Port to F_Port to N_Port using a single Fibre Channel fabric switch. In the absence of a fabric switch FL_Port, NL_Ports can communicate with other NL_Ports in virtual point-to-point links through an FC_AL open loop circuit often through FC_AL (arbitrated loop) hub or loop switch devices. See: [E_Port](#), [F_Port](#), [FL_Port](#), [G_Port](#), [N_Port](#).

network time protocol

See [NTP](#).

non-volatile random access memory

See [NVRAM](#).

NTP

Network time protocol. NTP is used for distributing the Coordinated Universal Time (UTC) by means of synchronizing the clocks of computer systems over packet-switched, variable-latency data networks.

NVRAM

Non-volatile random access memory. NVRAM is a type of memory that retains data (including configuration settings) even when power is removed. You can configure NVRAM settings manually or restore them from a file.

path

A path to a device is a combination of a adapter [port instance](#) and a target port as distinct from internal paths in the fabric network. A fabric network appears to the operating system as an opaque network between the adapter (initiator) and the target.

Because a path is a combination of an adapter and a target port, it is distinct from another path if it is accessed through a different adapter or it is accessing a different target port. Consequently, when switching from one path to another, the driver might select a different adapter (initiator), a different target port, or both.

This selection is important to the driver when selecting the proper method of failover notification. It can make a difference to the target device, which might have to take different actions when receiving retries of the request from another initiator or on a different port.

PCM

Power and cooling module. A device that consists of one power supply and three fans.

point-to-point

Also FC-P2P. Two Fibre Channel nodes directly connected (not in a loop).

port

Access points in a device where a link attaches. There are four types of ports, as follows:

- **N_Port**—a Fibre Channel port that supports point-to-point topology.
- **NL_Port**—a Fibre Channel port that supports loop topology.
- **F_Port**—a port in a fabric where an N_Port can attach.
- **FL_Port**—a port in a fabric where an NL_Port can attach.

port instance

The number of the port in the system. Each adapter may have one or multiple ports, identified with regard to the adapter as port 0, port 1, and so forth. To avoid confusion when dealing with a system containing numerous ports, each port is assigned a port instance number when the system boots up. So Port 0 on an adapter might have a port instance number of 8, for example, if it is the eighth port discovered by the system.

POST

Power-on self test. Diagnostics that the router performs at start-up.

power and cooling module

See [PCM](#).

power-on self test

See [POST](#).

reduced instruction set computer

See [RISC](#).

registered state change notification

See [RSCN](#).

remote procedure call

See [RPC](#).

RISC

Reduced instruction set computer. A computer microprocessor that performs fewer types of computer instructions, thereby operating at higher speeds.

RPC

A protocol used by a program to request a service from a program located in another computer in a network. RPC uses the client/server model.

RSCN

Registered state change notification. RSCN is a Fibre Channel fabric notification sent to all specified nodes when any major fabric changes occur. This notification allows nodes to immediately gain knowledge about the fabric and react accordingly.

router log

Log of messages describing events that occur on the intelligent storage router.

SAN

Storage area network. Multiple storage units (disk drives) and servers connected by networking topology.

SANsurfer Router Manager

Workstation-based router management application that provides a [GUI](#) used to configure and monitor intelligent storage routers.

SCSI

Small computer system interface. A high-speed interface used to connect devices, such as hard drives, CD drives, printers, and scanners, to a computer. The SCSI can connect many devices using a single controller. Each device is accessed by an individual identification number on the SCSI controller bus.

SFP

Small form-factor pluggable. A compact, hot-pluggable transceiver used for both telecommunication and data communications applications. It interfaces a network device mother board (for a switch, router, media converter, or similar device) to a fiber optic or copper networking cable. It is a popular industry format supported by many network component vendors. SFP transceivers are designed to support SONET, Gigabit Ethernet, Fibre Channel, and other communications standards.

simple network management protocol

See [SNMP](#).

small computer system interface

See [SCSI](#).

small form-factor pluggable

See [SFP](#).

SNMP

Simple network management protocol. SNMP is a networking protocol that enables you to monitor the router using third-party applications that use SNMP.

storage area network

See [SAN](#).

target

The storage-device endpoint of a SCSI session. Initiators request data from targets. Targets are typically disk-drives, tape-drives, or other media devices. Typically a SCSI peripheral device is the target but an adapter may, in some cases, be a target. A target can contain many LUNs.

A target is a device that responds to a requested by an initiator (the host system). Peripherals are targets, but for some commands (for example, a SCSI COPY command), the peripheral may act as an initiator.

TCP

Transmission control protocol. A set of rules to send data in packets over the Internet protocol.

virtual logical area network

See [VLAN](#).

virtual port group

See [VPG](#).

VLAN

Virtual logical area network (LAN). A group of hosts with a common set of requirements that communicate as if they were attached to the same wire, regardless of their physical location. Although a VLAN has the same attributes as a physical LAN, it allows for end stations to be grouped together even if they are not located on the same LAN segment. VLANs enable network reconfiguration through software, instead of physically relocating devices.

VPG

Virtual port group. VPG is the iSR6200 software component used to create additional logical Fibre Channel adapter initiator ports on the fabric.

world wide name

See [WWN](#).

world wide node name

See [WWNN](#).

world wide port name

See [WWPN](#).

world wide unique LUN name

See [WWULN](#).

WWN

World wide name. A unique 64-bit address assigned to a device by the device manufacturer.

WWNN

World wide node name. A unique 64-bit address assigned to a device.

WWPN

World wide port name. A unique 64-bit address assigned to each port on a device. One WWNN may contain multiple WWPN addresses.

WWULN

World wide unique LUN name. Identifiers for SCSI devices are read from page 83 and page 80 of your SCSI block device as based on the SCSI standard. SANsurfer looks for identifiers in the order of: page 83 type 3, page 83 type 2, page 83 type 1, page 80, and lastly page 83 type 0.

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